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MT8850A/MT8852A Remote Programming Manual

Software release 2.30

Bluetooth™

MT8850A/MT8852A Bluetooth Test Set

Remote Programming Manual

For MT8850A and MT8852A software release 2.30

Anritsu

Originated by Anritsu Ltd., EMD, Stevenage, U.K.

P/N: 13000-00110
REVISION: G
CREATED June 2003
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Chapter 1. General Information

Scope of this Manual

This manual provides GPIB related information for the following two units:

- MT8850A Bluetooth Test Set
- MT8852A Bluetooth Test Set.

All information in this manual applies equally to both the MT8850A and the MT8852A unless otherwise stated, and is most cases this is signified by the use of "MT8850A/MT8852A".

Chapters 7 and 8 deal specifically with SCO configuration and connection and therefore apply only to the MT8852A.

Software Versions

This manual provides details of the operation and functionality of the following software version:

MT8850A: 2.30

MT8852A: 2.30

Introduction

This document provides a list of all the GPIB mnemonics for the Anritsu MT8850A/MT8852A Bluetooth test set.

The majority of the GPIB commands have equivalents in the front panel menu settings. The MT8850A/MT8852A Bluetooth Test set supports the IEEE 488.2—1 992 GPIB standard. For further information about GPIB programming, refer to the IEEE 488.1/2 Standards documents.

Command Presentation

The commands are presented in a structured manner as shown below.

Command format	For each command, the command name and syntax will be presented in a fixed pitch font. For example: `OPCFG<ws><param1><,><param2>[<,><param1>]` See page 3-1 for a description of the syntax. Each of the allowable values for the command argument(s), if any, will be described
Remarks	This will provide an expanded description of the command, how to use the command, and programming hints or restrictions. Remarks will only be included where appropriate.
Related Commands	Commands that impact or relate to this command. Related commands will only be included where appropriate.
Example	An example of the command in use.
Response	An example of how the tester responds to a query command.

Abbreviations

EUT	Equipment Under Test
GPIB	General Purpose Instrument Bus
'DH' packets	DH1, DH3 and DH5 are high data rate packets because the packet payload in not reduced and error correction.
OP	Output power test
PC	Power control test
MI	Modulation characteristics test
IC	Initial carrier frequency test
CD	Carrier frequency drift test
SS	Single slot sensitivity test
MS	Multi slot sensitivity test
MP	Maximum input power sensitivity test
SCO	Synchronous Connection Oriented

Chapter 2. General Operation

The MT8850A/MT8852A has a number of modes of operation these are: **script mode**, **single test mode**, **signal generator mode** and **CW measurement mode**. The testing modes, script and single test, are controlled by the operation mode (OPMD) command, and the signal generator and calibration modes are special Anritsu modes.

The Anritsu Bluetooth test set performs the following RF tests: -

Output power	(TRM/CA/01/C)
Power control	(TRM/CA/03/C)
Modulation characteristics	(TRM/CA/07/C)
Initial carrier frequency	(TRM/CA/08/C)
Carrier frequency drift	(TRM/CA/09/C)
Single slot sensitivity	(RCV/CA/01/C)
Multi-slot sensitivity	(RCV/CA/02/C)
Maximum input power sensitivity	(RCV/CA/06/C)

Script Mode

Scripts are a set of one of each of the above RF tests. The operator configures which tests are run in a particular script and the parameters of each of the tests within a script.

There are ten scripts. The first two scripts have been predefined and can be read and run but not altered. The remaining eight scripts (3 to 10 inclusive) can be configured as required.

Scripts can be protected from updates using the script lock command. When a script is locked it cannot be altered unless that particular script is unlocked using the script unlock password (Scripts 1 and 2 are fixed).

See GPIB commands LOCK(?) ,UNLOCK and LKPASS.

Single Test Mode

In this mode a single test can be run either once or continuously from a single instruction.

Signal Generator Mode

This mode is to provide known calibrated outputs that can be used to test instruments when a Bluetooth link has not been established.

CW Measurement Mode

This mode is used to measure a fixed frequency modulation signal. Power, frequency, and modulation can be measured.

GPIB Convention

The MT8850A/MT8852A Bluetooth Test Set follows IEEE488.2 conventions, with all the 488.2 mandatory commands supported.

Chapter 3. GPIB Operation

Mnemonic Syntax

Termination

GPIB commands must be terminated with either (or both): -

End Of String (EOS) byte, which is the '\n' or 0x0A character, or

End Of message Indicator (EOI) which is a line on the GPIB interface.

All strings returned by GPIB commands are terminated with both the **End of String (EOS)** byte, which is again the linefeed character, '\n' (0x0A), and the **End Of Message Indicator**, which is the **EOI** line on the GPIB interface.

Syntax

Each GPIB instruction is described using the following syntax.

```
OPCFG<ws><param1><,><param2>[<,><param1>]
```

OPCFG	Mnemonic (Command)
<>	Must be present
ws	White space character (normally a space character, 0x20)
[]	Optional parameters
;	Message unit terminator. A GPIB message can comprise of a number of GPIB commands called command units. A GPIB command message can be made up of a number of command units separated by the semicolon (;).

Suffixes

All the commands that allow a level to be set as a value argument and are floating point values, can use the E-0x convention or a suffix multiplier. The GPIB standard [units] convention (i.e., MS for milliseconds, etc.) IEEE codes and formats have been implemented for the suffix units and multipliers. The suffix unit is always allowed but is not required and is shown in brackets where appropriate.

The following table lists the numeric data suffix mnemonics for the MT8850A/MT8852A Bluetooth test set. The suffixes are used when entering numeric data with GPIB commands (use of these codes is optional).

Suffix Multipliers		Suffix Units	
Definition	**Mnemonic**	**Definition**	**Mnemonic**
1E18	EX	Decibels	DB
1E15	PE	dB ref to 1 mW	DBM
1E12	T	dB ref to 1 mV	DBUV
1E9	G	Mega Hertz	MHZ
1E6	MA	Percent	PCT
1E3	K	Seconds	SEC
1E-3	M	Seconds	S
1E-6	U	Volts	V
1E-9	N	Watts	W
1E-12	P	Hertz	HZ
1E-15	F	Kilohertz	KHZ
1E-18	A		

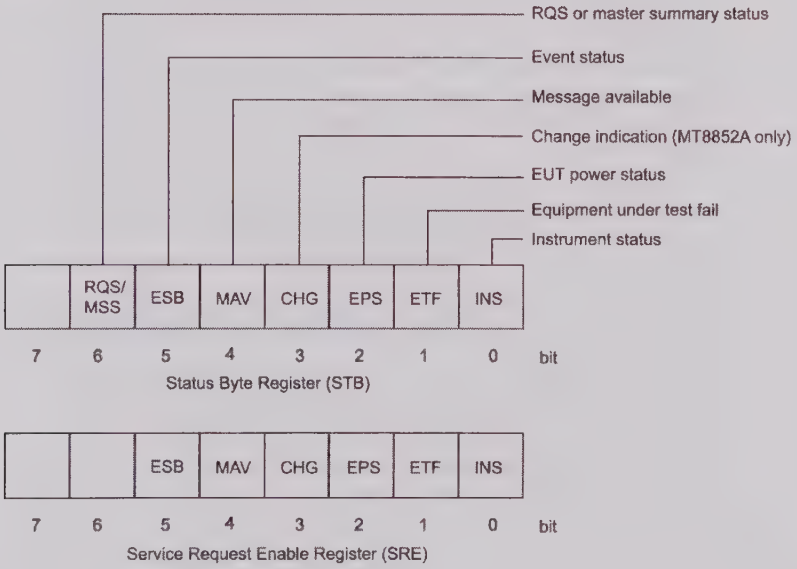
Character Case

The mnemonics and all the parameters use either upper or lower case characters unless specified otherwise.

GPIB 488.2 Registers

The following diagram shows the GPIB event and status registers. The meaning of each bit is described below.

Status Byte Register (STB) and Service Request Enable Register (SRE)

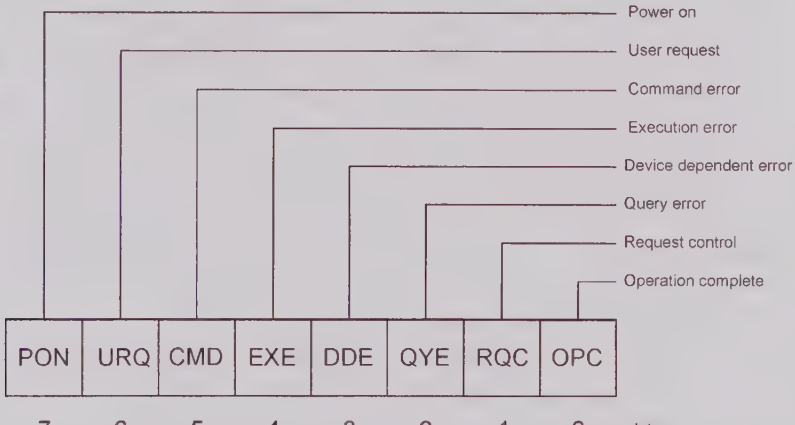


	Status byte
RQS/ MSS	When the Status byte is read via a Serial Poll operation this bit is RQS (Request Service). When the Status byte is read via the *STB? Command this bit is MSS (Master Summary Status). This bit has no function in the Service Request Enable Register. (Request service) This bit is set when one of the other bits in the status byte is set and the corresponding bit in the Service Request Enable Register (SRE) has been set. When this bit is set an SRQ is indicated over the GPIB interface. The SRQ is cleared by a serial poll, the status byte returned to the controller and the bit that caused the SRQ is cleared. (Master Summary Status) This bit is the inclusive OR of the bitwise combination (excluding bit 6) of the Status Byte register and the Service Request Enable register. Note that the *STB? Command does not alter the Status byte, nor will it clear an SRQ.

	Status byte
ESB	(Event status bit) When a bit is set in the event register and the corresponding bit has been set in the event status enable register (ESE) the ESB bit in the status register will be set.
MAV	(Message available) This bit is always set when there is data available to be read out of the output buffer and cleared when the output buffer is empty.
CHG	(Change indication) This bit is cleared on initialisation, a serial poll, and when the CLS command has been sent. This bit is set when one of the change bits has been set and the corresponding bit in the change status enable (CHE) register has been set.
EPS	(EUT Power Status) This bit is cleared on initialisation and when the CLS command has been sent. This bit is set when the EUT power matches the maximum or minimum power. Use the status command to read whether max or min was reached.
ETF	(Equipment Test Fail) This bit is cleared on initialisation and when the *CLS command has been sent. This bit is set when one of the equipment under test fail register bits have been set and the corresponding bit in the equipment under test fail register enable (ETE) bit has been set.
INS	(Instrument status) This bit is cleared on initialisation and when the *CLS command has been sent. This bit is set when one of the instrument status bits has been set and the corresponding bit in the instrument status enable (INE) register has been set.

The Status Byte register is read via a Serial Poll or with the *STB? Command. It cannot be written to directly by the user. The Service Request Enable Register is written to with the *SRE command and read with the *SRE? Command. It is cleared by *CLS.

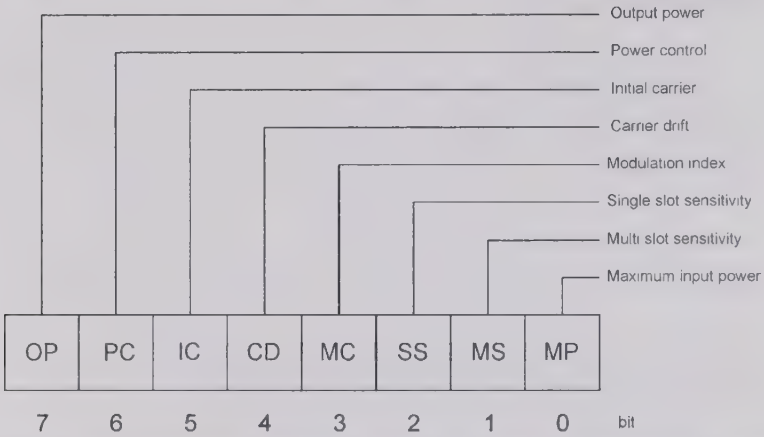
Standard Event Status Register (ESR) and Standard Event Status Enable Register (ESE)



	ESR and ESE bit definitions
PON	Power On bit. This bit is set on power up of the device only and cleared if the instrument is reset or receives a *CLS command. This bit only indicates that a power on has occurred.
URQ	Not used in the MT8850A
CMD	Command error. Received an unrecognized command.
EXE	Execution error. Could not execute a command. For example, a parameter is out of the allowable range.
DDE	Device Dependent Error. The specific error can be found by using the ERRLST command.
QYE	Query Error
RQC	Request Control. GPIB controllers only.
OPC	Operation Complete. When a program message that includes the *OPC command has been completed and the GPIB interface is idle with any responses read out of the output buffer this bit is set. For example, if the last command in a configuration sequence is *OPC, the OPC bit in the event status register will be set when that configuration list has been completed.

The Standard Event Status Register is read with the *ESR? Command. Reading the ESR clears it. The Standard Events Status Enable Register is written to with the *ESE command and read with the *ESE? command. Both registers are cleared by *CLS.

Equipment Under Test (EUT) Fail register (ETF) and Equipment Under Test (EUT) Fail Enable Register (ETE)

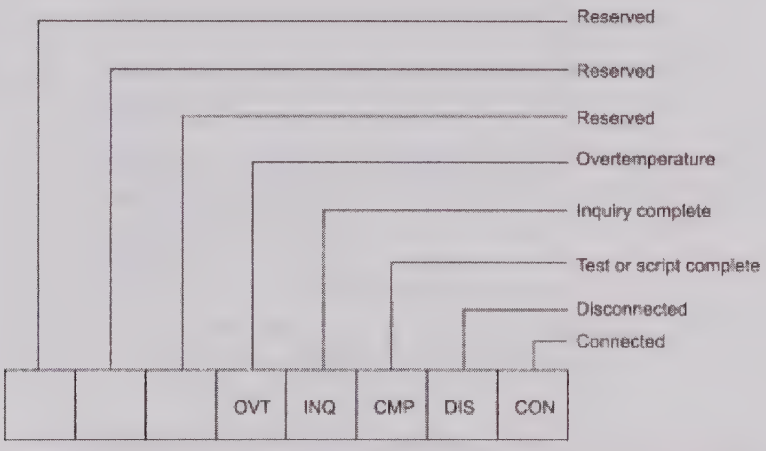


This EUT register is cleared on the start of a test or script. When a test completes, if it has failed the test limit parameters enabled to give a fail result the corresponding bit in this register will be set. These events can be programmed to provide an SRQ by setting the corresponding bit(s) in the Equipment Under Test Fail Enable Register (ETE).

	ETF and ETE bit definitions
OP	Output power test fail bit. This bit indicates that the output power test failed the enabled limit criteria set.
PC	Power control test fail bit. This bit indicates that the power control test failed the enabled limit criteria set
IC	Initial carrier test fail bit. This bit indicates that the initial carrier test failed the enabled limit criteria set.
CD	Carrier drift test fail bit. This bit indicates that the carrier drift test failed the enabled limit criteria set
MC	Modulation index test fail bit. This bit indicates that the modulation index test failed the enabled limit criteria set
SS	Single slot sensitivity test fail bit. This bit indicates that the single slot sensitivity test failed the enabled limit criteria set
MS	Multi slot sensitivity test fail bit. This bit indicates that the multi slot sensitivity test failed the enabled limit criteria set
MP	Maximum input power test fail bit. This bit indicates that the maximum input power sensitivity test failed the enabled limit criteria set

The EUT Fail register is read with the *ETF?.

Instrument Status Register (INS) and Instrument Status Enable Register (INE)



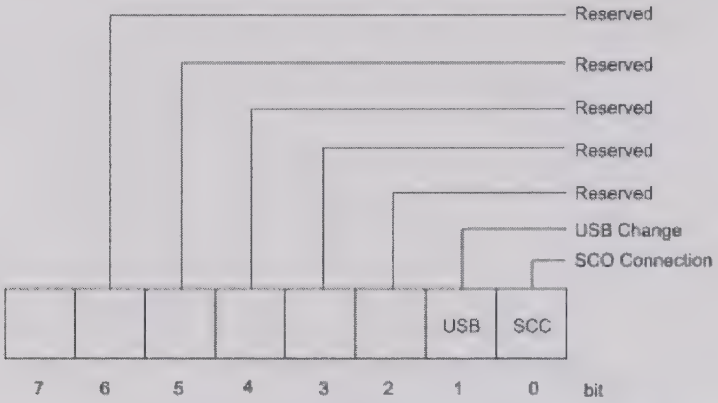
The INS register displays the present status of the instrument and can be used to provide SRQ's for test or script completion and the connection status of the instrument by setting the corresponding bits in the INE register

	INS and INE bit definitions
OVT	Instrument Overtemperature Warning
INQ	EUT Address Inquiry complete
CMP	Script or test completion. This bit is cleared when a test or script has started and is set on its completion or termination.
DIS	Disconnect. This bit is cleared when a connection has been made and set when disconnected.
CON	Connection. This bit is set when a connection has been made and cleared when the connection no longer exists.

A Device Dependant Error (DDE in the ESR register) will indicate if an error occurred, causing the test or script to be aborted. The ERRLST command can be used to get the cause of the termination.

The INS register is read with the *INS? Command. It cannot be cleared by reading it or by the *CLS command. The INE register is written to by the *INE command and read by the *INE? Command. It is cleared by *CLS.

Change Register (CHG) and Change Enable (CHE) Register (MT8852A only)



The CHG register indicates when a change of state has occurred in the instrument, and can be used to provide SRQs by setting the corresponding bits in the CHE register.

The CHG register is read with the *CHG? command. It is cleared by reading it or with the *CLS command.

The CHE register is written to with the *CHE command and read by the *CHE? command. It is cleared by the *CLS command.

	CHG and CHE bit definitions
SCC	This bit is set to indicate when a SCO status has changed. Use the "STATUS" command to retrieve the present SCO status. (MT8852A only)
USB	This bit is set to indicate when a USB attached status has changed. Use the "STATUS" command to retrieve the present USB status. (MT8852A only)

GPIB on RS232

Version 1.1 or above of the control software supports the use of RS232 in addition to GPIB commands. Use the RS232 connector on the rear panel of the unit.

The test is for RS232 instruments with version 1.1 software or above. It is used to set communications RS232 connector on the rear panel supports all GPIB commands including IEEE 488.2 low level control and handshaking.

Hardware handshake CTS and RTS lines are used to control the flow of data in and out of the tester and must be available in the cable as hardware handshaking is always enabled. The RS232 cable used between the COM port on the PC and the connector on the rear of the MT8850A/MT8852A must be of a Null Modem type such as that supplied with the MT8850A/MT8852A itself.

The DTR and DSR lines are connected together within the tester.

The MT8850A/MT8852A Bluetooth test set communications serial connector pin outs are:

Pin	Signal
1	NOT USED
2	RX Data
3	TX Data
4	DTR handshake signal
5	Signal ground
6	DSR handshake signal
7	RTS handshake signal
8	CTS handshake signal
9	NOT USED

The serial interface baud rate can be set using the MT8850A/MT8852A System interface menu under the main "Config" menu. Available baud rates are; 1200, 2400, 4800, 9600 (default), 19200, 38400, 57600, and 115200. The other RS232 parameters are predefined as 8 bits, no parity and 1 stop bit and cannot be changed.

Commands are entered as with the GPIB interface, conforming to the GPIB command format. All GPIB commands are supported. There are some additional commands, specific to the serial interface that are prefixed with an exclamation mark (!). All GPIB type commands and command strings should be terminated with a new line character (0A hex). The special serial mode commands do NOT require a termination character.

Requested data is returned in the same format as with GPIB, but with a preceding 'R' and a terminating new line character.

SRQs are available, and are output as an SRQ message 'S' followed by a terminating new line character. When the SRQ message has been received, an "!SPL" command (equivalent to the GPIB serial poll) can be issued. The tester will respond with the serial poll data message, which is a single character, proceeded by 'P' and terminated by a new line character.

A device clear message !DCL can be sent to clear the tester input and output message queues, and terminate any GPIB or serial actions pending.

Summary of RS232 Commands

Mnemonic	Meaning	Comments
!DCL	Device clear	Clear all queues and terminates any pending actions
!SPL	Serial poll	Clears SRQ cause and returns the status byte
P	Response to serial poll	Status byte
R	Return of requested data	

Chapter 4. Event Register and Mandatory Commands

This chapter provides details of the event register and mandatory commands. The commands are listed in alphabetical order as shown below.

- CHE (Change Enable Register) (MT8852A only)
- CHG (Change Register) (MT8852A only)
- CLS (Clear GPIB Status bytes)
- ESE (Standard Event Status Enable)
- ESR (Standard Event Status Register Query)
- ETE (EUT Fail Enable Register)
- ETF (EUT Fail Register Query)
- IDN (Identification Query)
- INE (Instrument Status Enable Register)
- INS (Instrument Status Register Query)
- OPC (Operation Completed Indication)
- RST (Instrument Reset)
- SRE (Service Request Enable Register)
- STB (Status Byte Register Query)
- TST (Self Test Query)
- WAI (Wait to Continue)

CHE (Change Enable Register)

The bits in the Change Enable Register are the same as those in the Change Register. The two registers are bitwise AND'ed to determine whether to set the CHG bit in the Status Register.

Set command

Command format `*CHE<ws><val>`

<val> decimal representation of an 8 bit binary mask

Remarks <val> is the sum of the binary weights of each of the bits to be enabled. See the explanation in chapter 3 for a description of the bits in the Change and Change Enable registers.

Example To enable bit 0 (SCO Connection)

```
*CHE 1
```

Request command

Command format `*CHE?`

Response `<val>`

<val> is a decimal representation of the 8 bit mask as defined above.

Remarks *CHE? Does not clear the Change Enable register. Use *CHE 0 or *CLS for this purpose.

CHG (Change Register)

Returns the current state of the Change Register (CHG).

Request command

Command format `*CHG?`

Response `<val>`

<val> is a decimal representation of the binary value of the Change Register.

Example A return value of 1 indicates that bit 0 (SCO Connection) is set.

Remarks See the explanation in chapter 3 for bit definitions of the Change Register. *CHG? Does not clear the Change Register.

CLS (Clear GPIB Status Bytes)

Command format `*CLS`

Remarks Clears all the GPIB status data structures, including the Event Status Register and Status Register, except for the MAV bit. *CLS does not clear the Output Queue.

ESE (Standard Event Status Enable)

The bits in the Standard Event Status Enable Register are the same as those in the Standard Event Status Register. The two registers are bitwise AND'ed to determine which standard event(s) will generate a SRQ.

Set Command

Command format `*ESE<ws><val>`

<val> decimal representation of an 8 bit binary mask

Remarks <val> is the sum of the binary weights of each of the bits to be enabled. Refer to chapter 3 of this manual for a description of the bits in the Standard Event Status and Standard Event Status Enable registers.

Examples:- To enable bit 4 (Execution Error)

```
*ESE 16
```

To enable bit 5 (Command Error)

```
*ESE 32
```

To enable both bits

```
*ESE 48
```

Request command

Command format `*ESE?`

Response `<val>`

<val> is a decimal representation of the 8 bit mask as defined above.

Remarks *ESE? Does not clear the Standard Event Status Enable register. Use *ESE 0 or *CLS for this purpose.

ESR (Standard Event Status Register Query)

Returns the current state of the Standard Event Register (ESR).

Request command

Command format `*ESR?`

Response `<val>`

<val> is a decimal representation of the binary value of the Standard Event Status Register.

Example A return value of 5 indicates that bits 0 (Operation Complete) and 2 (Query Error) are set.

Remarks See page 3-5 for bit definitions of the Standard Event Status Register. *ESR? Clears the Standard Event Status Register.

ETE (EUT Fail Enable Register)

The bits in the EUT Fail Enable Register are the same as those in the EUT Fail Register. The two registers are bitwise AND'ed to determine which failed test(s) will generate a SRQ.

Set command

Command format `*ETE<ws><val>`

<val> decimal representation of an 8 bit binary mask

Remarks <val> is the sum of the binary weights of each of the bits to be enabled. Refer to chapter 3 of this manual for a description of the bits in the EUT Fail and EUT Fail Enable registers.

Examples To enable bit 4 (Carrier Drift)

```
*ETE 16
```

To enable bit 5 (Initial Carrier)

```
*ETE 32
```

To enable both bits

```
*ETE 48
```

Request command

Command format `*ETE?`

<val> decimal representation of an 8 bit binary mask

Response `<val>`

<val> is a decimal representation of the 8 bit mask as defined above.

Remarks *ETE? Does not clear the EUT Fail Enable register. Use *ETE 0 or *CLS for this purpose.

ETF (EUT Fail Register Query)

Returns the current state of the EUT Fail Register (ETF).

Command format `*ETF?`

Response `<val>`

<val> is a decimal representation of the binary value of the Standard Event Status Register.

Example A return value of 5 indicates that bits 0 (Maximum Input Power) and 2 (Single Slot Sensitivity) are set.

Remarks See page 3-6 for bit definitions of the EUT Fail Register. *ETF? Clears the EUT Fail Register.

IDN (Identification Query)

Command format `*IDN?`

(alternatively OI can be used)

Response A string is returned containing the manufacturer's name, the model number, the serial number, and the software revision. Commas separate the items.

Example `ANRITSU,MT8850A,6K00000031,2.51`

Remarks The operation of this command is identical to SYSCFG? IDENT, see chapter 6 for details.

INE (Instrument Status Enable Register)

The bits in the Instrument Status Enable Register are the same as those in the Instrument Status Register. The two registers are bitwise AND'ed to determine which condition(s) will generate a SRQ.

Set command

Command format `*INE<ws><val>`

<val> decimal representation of an 8 bit binary mask

Remarks <val> is the sum of the binary weights of each of the bits to be enabled. Refer to chapter 3 of this manual for a description of the bits in the Instrument Status and Instrument Status Enable registers.

Example To enable bit 3 (Inquiry Complete)

`*INE 8`

To enable bit 2 (Test or Script Complete)

`*INE 4`

To enable both bits

`*INE 12`

Request command

Command format `*INE?`

Response `<val>`

<val> is a decimal representation of the 8 bit mask as defined above.

Remarks *INE? Does not clear the Instrument Status Enable register. Use *INE 0 or *CLS for this purpose.

INS (Instrument Status Register Query)

Returns the current state of the Instrument Status Register (INS).

Request command

Command format `*INS?`

Response `<val>`

<val> is a decimal representation of the binary value of the Instrument Status Register.

Example A return value of 5 indicates that bits 0 (Connected) and 2 (Test or Script Complete) are set.

Remarks See page 3-7 for bit definitions of the Instrument Status Register. *INS? Does not clear the Instrument Status Register.

OPC (Operation Completed Indication)

These commands generate indications when all pending operations are completed. An operation is complete when all input messages processed and all responses have been written into the GPIB Output queue.

Set command

Sets the OPC Event bit in the Standard Event Status Register when all pending operations are completed.

Command format `*OPC`

Example
```
OPMD SCRIPT; SCPTSEL 3; *OPC
```

Remarks The OPC bit will be set in the ESR when the OPMD and SCPTSEL commands have been completed.

Request command

Places an ASCII character '1' in the GPIB Output queue when all pending operations are completed.

Command format `*OPC?`

Example
```
OPMD SCRIPT; SCPTSEL 3; *OPC?
```

Remarks An ASCII '1' will be placed in the Output queue when the OPMD and SCPTSEL commands have been completed.

RST (Instrument Reset)

Resets the MT8850A/MT8852A to its default state

Command format `*RST`

Remarks The GPIB Address is not changed. Neither are the GPIB Status registers and Input/Output queues cleared. The effect of this command is the same as pressing the PRESET key on the front panel.

SRE (Service Request Enable Register)

The bits in the Service Request Enable Register (SRE) are the same as those in the Status Byte Register (STB), Except for bit 6, which is not used in the SRE. With the exception of bit 6 the two registers are bitwise AND'ed to determine which condition(s) will generate a SRQ.

Set command

Command format `*SRE<ws><val>`

<val> decimal representation of an 8 bit binary mask

Remarks <val> is the sum of the binary weights of each of the bits to be enabled. Refer to chapter 3 of this manual for a description of the bits in the Status Byte and Service Request Enable registers. Note that bit 6 should never be set.

Examples To enable bit 4 (Message Available)

```
*SRE 16
```

To enable bit 2 (Internal Error)

```
*SRE 4
```

To enable both bits

```
*SRE 20
```

Request command

Command format `*SRE?`

Response `<val>`

<val> is a decimal representation of the 8 bit mask as defined above.

Remarks *SRE? Does not clear the Instrument Status Enable register. Use *SRE 0 or *CLS for this purpose. Bit 6 will never be set.

STB (Status Byte Register Query)

Returns the current state of the Status Byte Register (STB) with the RQS bit replaced by the MSS bit (bit 6).

Command format *STB?

Response <val>

<val> is a decimal representation of the binary value of the Instrument Status Register.

Example A return value of 70 indicates that bits 1 (EUT Fail), 2 (Internal Error Bit), and bit 6 (Master Summary Status) are set.

Remarks See page 3-3 for bit definitions of the Status Byte Register. *STB? Does not clear the Instrument Status Register.

TST (Self Test Query)

Invokes an instrument Self-Test cycle and places the results in the Output Queue

Command format *TST?

Response "ALL_TESTS_PASSED"

"SELFTEST_FAILED"

Remarks This command differs from STERR in that it invokes a Self-Test before returning the results whereas STERR simply returns the results of a previous Self-Test.

WAI (Wait to Continue)

This mandatory IEE488.2 command is decoded but produces no action because the Overlapping Commands feature is not implemented on MT8850A/MT8852A.

Command format *WAI

Chapter 5. General GPIB commands

This chapter provides details of the general GPIB commands. The commands are listed in alphabetical order as shown below.

- BOOTSTATUS Initial startup self test status request
- CONT Continue after self test
- ERRLST Error list
- EUTINIT Bluetooth Slave Mode
- EUTMAXPWR Send EUT to max power control
- LKPASS Update lock/unlock password
- LOCK Script lock
- OPMD Operation mode
- SCPTCFG Configure script
- SCPTNM Set script name
- SCPTSEL Select script
- SCRIPTMODE Script Mode
- STATUS Status command
- STERR Request POST or *TST? Results
- TSTPAUSE Test Pause
- TXPWR Transmitter Power Level
- UNLOCK Script unlock

BOOTSTATUS? (Startup Self Test Status Request)

Command format BOOTSTATUS?

Remarks On startup the instrument performs a self test. If the self test fails a warning screen is displayed indicating the cause. This command returns the status of the instrument during power up.

0 Passed self test. Instrument running.

1 Startup running self test.

–1 Self test FAILED.

During the startup procedure all commands except STERR, BOOTSTATUS?, CONT and GPIB 488.2 event and status commands will produce a GPIB execution error. STERR will return the self test results.

Related Commands STERR, CONT

CONT (Continue After Self Test)

Command format CONT

Remarks This command will allow the system to continue the startup sequence if there are self test failures other than DSP errors.

Related Commands STERR, BOOTSTATUS?

ERRLST (Error List)

This command reads out and clears the recorded error states latch. The error states latch records an error occurring and retains the error states until the instrument is reset, the power is cycled or the error states latch is read using this command. The errors are indicated via the DDE bit of the event register (ESR).

Command format ERRLST

Response ABCCDDEFGHHIJJ!KKKKKKK!LLLLLLL!MMMMMMM!NNNNNNN!

A	CONNECTION ALREADY EXISTS	0 – No previous connection 1 – Connection already exists
B	EUT TEST MODE STATE	0 – EUT Test Mode enabled 1 – EUT Test Mode not enabled
CC	EUT HCI ERROR	00 – OK XX – 2 digit error code (EUT controlled via RS232 interface)
DD	INTERNAL HCI ERROR	00 – OK XX – 2 digit error code
E	INTERNAL SYNC ERROR	0 – OK 1 – Internal HCI synchronisation error
F	EUT SYNC ERROR	0 – OK 1 – EUT HCI synchronisation error (control via RS232)
G	REQUEST FAILED	0 – OK 1 – Request failed (system busy)
HH	DSP STATUS	00 – OK 01 – Searching channel 02 – Searching sync word 03 – Incorrect packet length 04 – No payload 05 – Auto ranging 06 – Incorrect packet 07 – Incorrect packet type 08 – Over range 09 – Under range 10 – Invalid payload

Note: Setting of the DSP status code will not set the DDE bit of the event register.

I	EUT BT ADDRESS	0 – OK 1 – No EUT Bluetooth Address set (in Manual mode)
JJ	HCI COMM STATUS	00 – OK 01 – Unknown HCI command 02 – No connection 03 – Hardware failure 04 – Paging timeout 05 – Connection timeout 06 – Unsupported feature parameter 07 – Connection ended by user 08 – Low resource connection ended 09 – Power Off connection ended 10 – Local host connection ended 11 – Unsupported remote feature

	12 – Role change not allowed 13 – LMP response timeout
KKKKKKK	Internal core error text (variable length)
LLLLLLL	EUT core error text (variable length)
MMMMMMM	Last GPIB command that caused a Command error (variable length)
NNNNNNN	Last GPIB command that caused a Execution error (variable length)

EUTINIT (Bluetooth Slave Mode)

This command puts the MT8850A/MT8852A into Bluetooth Slave mode. It is the equivalent of the Make me an EUT function on the Configuration/System Features/Connection Control menu.

Command format `EUTINIT`

Remarks To return the MT8850A/MT8852A to normal (Master) mode, use *RST.

EUTMAXPWR (Send EUT to Max Power Control)

This command enables or disables the setting of an EUT to maximum power at the start of a test even if the EUT reports that it supports power control.

Set command

Command Format EUTMAXPWR<ws><script><,><state>

<script> :1 to 10

<state> :ON or OFF

Example Example to set to OFF

EUTMAXPWR 3,OFF

Request command

Command Format EUTMAXPWR?<ws><script>

Response If script 4 was OFF then response would be, EUTMAXPWR 4,OFF

LKPASS (Update Lock/Unlock Password)

This command enables the operator to change the script lock password. The password is a number between 1 and 65535. All spaces will be removed.

Change lock password

Command format `LKPASS<ws><old password><,><new password>`

<old password> Present lock/unlock password
<new password> New lock/unlock password

Example To change the present password "1234" to "6543" the command would be:

```
LKPASS 1234,6543
```

LOCK (Script Lock)

This command will lock a script so that it cannot be altered unless it is unlocked with the unlock command. The enquiry version of this command will return TRUE or FALSE indicating whether a script has been locked.

Set command

Command format `LOCK<ws><script number><,><password>`

<script number> 3 to 9
<password> The lock/unlock password. Default is "1234".

Example Lock script 4

```
LOCK 4,1234
```

Request command

Command format `LOCK?<ws><script number>`

<script number> 1 to 9

Response The response will be just a TRUE or FALSE.

Example To request the status of script 5 the command would be:

```
LOCK? 5
```

Response If script 5 is locked

```
TRUE
```

OPMD (Operation Mode)

This command sets or requests the operation mode of the instrument.

Set command

Change the mode of the instrument between script and signal generator mode.

Command format `OPMD<ws><operation mode>[<,><test>]`

<operation mode> SCRIPT: script mode
STEST: single test mode
SIGGEN: signal generator mode
CWMEAS: CW measurement mode

Selected script test <test>

OP	Output power
PC	Power control
MI	Modulation Index
IC	Initial carrier
CD	Carrier drift
SS	Single slot sensitivity
MS	Multi slot sensitivity
MP	Max input power

Remarks <test> is required only when the operation mode> is STEST. Changing from Siggen mode to either of the other modes will cause a reset of the internal Bluetooth core.

It should be noted that in single test mode, only the test that has been selected can be configured. An error is output if an attempt is made to configure any other tests.

Example 1 Set to script mode. `OPMD SCRIPT`

Example 2 Set to single test mode, with the initial carrier test selected

`OPMD STEST,IC`

Request command

Request the present operation mode of the test set.

Command format `OPMD?`

Response Response is in the form of the command to set that state.

Example If the operation mode is single test mode with the power control test selected the command would be:

`OPMD?`

Response `OPMD STEST,PC`

SCPTCFG (Configure Script)

This command is used to select which tests are run as part of a script. All scripts and their tests are independent allowing up to eight uniquely specified sets of tests to be programmed into the MT8850A/MT8852A.

Set command

Command format `SCPTCFG<ws><script number><,><test><,><selected>`

<script number> 3 to 10
<test>

OP	Output power
PC	Power control
MI	Modulation Index
IC	Initial carrier
CD	Carrier drift
SS	Single slot sensitivity
MS	Multi slot sensitivity
MP	Max input power
ALLTSTS	To set the status of all tests in this script at once

<selected>

ON
OFF

Remarks All ten scripts can be read but only 3 to 10 can be set.

Example To select the output power test in script 4 the command would be:

```
SCPTCFG 4,OP,ON
```

Request command

This command outputs the test configuration of this script.

Command format `SCPTCFG?<ws><script number>`

<script number> 1 to 10

Response The response is a list of ON or OFF for each test in the following order separated by commas.

Output power

Power control

Modulation Index

Initial carrier

Carrier drift

Single slot sensitivity

Multi slot sensitivity

Max input power

Example To read the configuration of script 5 where all tests are selected except power control the command would be:

```
SCPTCFG? 5
```

Response

```
ON,OFF,ON,ON,ON,ON,ON,ON
```

SCPTNM (Set Script Name)

Set or request the script name. The Anritsu predefined scripts names can not be set.

Set command

Command format

```
SCPTNM<ws><script number><,><script name>
```

<script number> 3 to 10
<script name> Script name using up to 9 characters.

Remarks If more than 9 characters are used the name will be terminated at the 9th character. The Anritsu predefined scripts, 1 and 2, names cannot be modified. If the script number is set to 1 or 2 and execution error will be given.

Example To set the name of script 4 to "ENG TEST1" the command would be:

```
SCPTNM 4,ENG TEST1
```

Request command

Command format

```
SCPTNM?<ws><script number>
```

<script number> 1 to 10

All ten scripts can be read but only 3 to 10 can be set.

Response Response is in the form of the command to set that state.

Example If the script 5 name is "ENG TEST X" the command would be:

```
SCPTNM? 5
```

Response

```
SCPTNM 5,ENG TEST X
```

SCPTSEL (Select Script)

Set or request the selected script to be executed. If this command is sent when in single test mode the presently selected test in the new script will now be selected.

Set command

Command format SCPTSEL<ws><script number>

<script number> 1 to 10

Example <script number> 1 to 10

SCPTSEL 1

Request command

Command format SCPTSEL?

Response is in the form of the command to set that state.

Example If the script selected was 5 the command would be:

SCPTSEL?

Response SCPTSEL 5

SCRIPTMODE (Script Mode)

This command determines how the tests within the specified script are run.

Set command

Command Format SCRIPTMODE<ws><script number><,><mode>

<script number> 1 to 10

<mode> :STANDARD

NULLPKT

SINGLEPAYLOAD

Example Set the Script Mode for script 3 to Null Packet

SCRIPTMODE 3,NULLPKT

Request command

Command Format SCRIPTMODE?<ws><script number>

<script number> :1 to 10

Response The response is in the form of the command to set that state.

Example If the script mode for script 9 is set to standard the command

SCRIPTMODE? 9

Will produce the response: SCRIPTMODE 9,STANDARD

STATUS (Status Command)

This command requests the instrument status.

Command format	STATUS	
Response	ABCCDDEFGHIJKLM	
	A	0 - Script mode, 1- single test mode, 2 - Signal generator mode, 3 – CW Measurement mode
	B	0 – Not in single remote test state , 1 – In single remote test state
	CC	Script number selected
	DD	Test selected :
		OP – Output power test
		PC – Power control test
		MI – Modulation characteristics test
		IC – Initial carrier test
		CD – Carrier drift test
		SS – Single slot sensitivity test
		MS – Multi slot sensitivity test
		MP – Maximum input power sensitivity test
	E	1 – Connected, 0 – Not connected
	F	Receiver Range (1 to 6 or A for Auto)
	G	10 MHz ref (0 – Internal, 1 – External),
	H	0 – EUT at minimum power 1 – EUT at intermediate power 2 – EUT at maximum power
	I	SCO Channel 1 (Disconnected = 0, Connected = 1)
	J	SCO Channel 2 (Disconnected = 0, Connected = 1)
	K	SCO Channel 3 (Disconnected = 0, Connected = 1)
	L	EUT test mode (in test mode = 1, not in test mode = 0)
	M	1 – USB device attached 2 – USB device removed 3 – Non Bluetooth USB device attached

STERR (Request POST or *TST? Results)

This command returns the results of the most recent Self-Test. It does not initiate a Self-Test itself.

Command format `STERR`

Response Where the Self-Test has completed without failures the response is the following string:-

`ALL TESTS PASSED`

Where the Self-Test has failed, the response is a list of those items which have failed. If there is more than one item they are separated by commas.

Example `ARMBOOT,VOLRAM 10FFF0F,DSPIF`

Indicates the Self-Test failed with ARM Boot checksum, Volatile RAM, and DSP interface errors.

A list of self test items is shown in the table below.

Related Commands `BOOTSTATUS?, CONT, *TST`

Self Test Items

The following is a list of all Self-Test items. For more information see the MT8850A/MT8852A Service Manual.

Self test item	Meaning
FLASHCSUM	Flash Code checksum error
CALCSUM	Calibration Data checksum error
PERSONCSUM	Personality checksum error
ARMBOOT	ARM Boot checksum error
ARMCD	ARM Code checksum error
ARMBT	ARM BT checksum error
FPGACSUM	Virtex FPGA checksum error
VOLRAM<ws><ABBBBBB>	Volatile RAM. "A" indicates the type of test that failed, BBBBBB is the list of addresses where the test failed.
NONVOLRAM	Non-Volatile RAM
DPRAM<ws><ABBBBBB>	CPU Dual Port RAM. A indicates the type of test that failed. BBBBBB is the list of addresses where the test failed.
DPRAMIF<ws><ABBBBBB>	IF Dual Port RAM. A indicates the type of test that failed. BBBBBB is the list of addresses where the test failed.
DSPRAM<ws><ABCCCCC>	DSP RAM. A indicates the type of test that failed. B indicates the type of RAM where the failure occurred. CCCCC is the list of addresses where the test failed.
DSPIF	DSP Interface error.

Self test item	Meaning
UART<ws><ABB>	UART's. A indicates the type of test that failed. BB is the address on which the failure occurred.
ARMST<ws><A>	ARM Self Test. "A" indicates the result of the self test.
ARMHS	ARM Handshake Jumpers.
DISPLAY	Display connection error
KBD	Keyboard connection error
DSPERR<ws><A>	DSP Startup Error A.
NORFPCB	RF PCB communication error
NOTCALED	No Calibration Data found
VIRTEX<ws><A>	Virtex loading error. A indicates at which stage the error occurred.
SPARTAN<ws><A>	Spartan loading error. A indicates at which stage the error occurred.
ARMINIT	ARM initialization error
TEMPWARN	Overtemperature warning

TSTPAUSE (Test Pause)

This command specifies whether a Test Pause LMP test control is used between changes in a test control format.

Set command

Command Format TSTPAUSE<ws><script number><,><state>

<script number> :1 to 10

<state> :ON or OFF

Example Turn Test Pause on for script 3

TSTPAUSE 3,ON

Request command

Command Format TSTPAUSE?<ws><script number>

<script number> 1 to 10

Response The response is in the form of the command to set that state.

Example If Test Pause is turned off for script 5 then the command

TSTPAUSE? 5

Will produce the response: TSTPAUSE 5,OFF

TXPWR (Transmitter Power Level)

This command sets the default transmitter power level for a script. It is the power level at which the connection and any inquiry are made. Individual tests within the script may modify the power level for their own purposes but the level will be returned to the script default on completion of the test. If a connection already exists then executing a TXPWR command will have immediate effect. For this reason do not use TXPWR whilst a test is in progress.

Set the Transmitter Power Level

Command format `TXPWR<ws><script number><,><power level>`

<script number> 1 to 10

<power Level>: 0.0 to –90.0 (dBm, in 0.1dB steps)

Remarks The default transmitter power level can be set for all ten scripts.

Example To set the default transmitter power level of script 3 to –10dBm.

```
TXPWR 3,-10.0
```

Request command

Command format `TXPWR?<ws><script number>`

<script number> 1 to 10

Response The response is in the form of the command to set that power level

Example If the transmitter power level for script 6 is –25.3dBm then the command would be:

```
TXPWR? 6
```

Response

```
TXPWR 6,-25.3
```

UNLOCK (Script Unlock)

This command will unlock a locked script so that it can be altered. If the unlock failed or the script is already unlocked an execution error will be indicated

Set command

Command format `UNLOCK<ws><script number><,><password>`

<script number> 3 to 10
<password> The lock/unlock password. Default is "1234".

Example To unlock script 4 the command would be:

```
UNLOCK 4,1234
```

Chapter 6. System configuration

This chapter provides details of the system configuration command and the associated parameters. The commands are listed in alphabetical order as detailed below.

SYSCFG (Set System Configuration)

Command format `SYSCFG<ws><config selection>[<,><parameters>.....]`

<config selection>

- AUTH — Authentication settings
- BNCOUTPUT — Rear panel output
- BTADDR — Tester Bluetooth address
- CONFIG — Tester configuration
- DISPSOUND — Tester display and sound control
- EUTADDR — EUT address
- EUTFEAT — EUT supported features
- EUTNAME — EUT user friendly name request
- EUTPSRM — EUT page scan repetition mode
- EUTRS232 — EUT RS232 HCI set up
- EUTSRCE — EUT address source
- HWINFO — Hardware information
- IDENT — Tester identity
- INQSET — Inquiry set up
- PAGSET — Page scan and timeout
- PAGETO — Page timeout setting
- PINCODE — PIN code.
- PINLENGTH — PIN code length.
- SCPTSET — Script set up
- VERDATE — Tester firmware version and date stamp

AUTH (Authentication Settings)

Set command

This command enables/disables the connection authentication.

Command format SYSCFG<ws><,><AUTH><,><STATE>,<Variable>

Variable ON Enable Connection Authentication

OFF Disable Connection Authentication

Example SYSCFG AUTH,STATE,ON

Request command

This command reads enable/disabled the connection authentication.

Command format SYSCFG?<ws>,AUTH,STATE

Example SYSCFG? AUTH,STATE

Response SYSCFG AUTH,STATE,ON

BNCOUTPUT (Rear Panel Output)

This command defines the output directed to the rear panel BNC outputs.

The allowable selections are restricted as follows:

- Output 1 cannot be RXON and Output 2 cannot be TXON.
- If Output 1 is TXON, output 2 can be any value.
- If Output 2 is RXON, output 1 can be any value.
- Otherwise Output 1 and Output 2 must be set to the same value.

Set command

Command format `SYSCFG<ws>BNCOUTPUT<,><output 1><,><output 2>`

<output>

`TXON (output 1 only)`

`RXON (output 2 only)`

`CH0PULSE`

`TXDATA`

`RXDATA`

`CORRFIRED`

Example To set the rear panel output to TX ON on output 1 and Correlator fired on Output 2, the command would be:

`SYSCFG BNCOUTPUT,TXON,CORRFIRED`

Request command

Command format `SYSCFG?<ws>BNCOUTPUT`

Response The information is returned in the order:

`<OUTPUT 1>,<OUTPUT 2>`

Example If the information is as follows, the response would be:

Output 1 – TX on
Output 2 – RX on

Response `SYSCFG BNCOUTPUT,TXON,RXON`

BTADDR (Tester Bluetooth Address)

This command allows the operator to read the MT8850A/MT8852A Bluetooth address.

Request command

Command format `SYSCFG?<ws>BTADDR`

Example `SYSCFG? BTADDR`

Response Example, if the BT address is 0x`000123ABCDEF`, the response would be

`000123ABCDEF`

CONFIG (Tester Configuration)

Under this system configuration section there are the following parameters:

Tester GPIB address

Tester communications RS232 baud rate

Tester rear panel RS232 mode

Tester measurement power range hold

Tester modulation index set up

Tester measurements done on POLL/NULL sequence

Tester's default TX power level

Measurement bandwidth setting

Tester's link timeout

GPIB (Tester GPIB Address)

Set command

Command format `SYSCFG<ws>CONFIG<,>GPIB<,><address>`

<address> 1 to 30 (Default 27)

Remarks If the GPIB address is changed, any further GPIB communication must be performed to the new GPIB address.

Example To set the GPIB address to 5 the command would be:

```
SYSCFG CONFIG,GPIB,5
```

Request command

Command format `SYSCFG?<ws>CONFIG<,>GPIB`

Response The response is returned in the form of the command to set that state.

Example

```
SYSCFG? CONFIG,GPIB
```

If the GPIB address is 6 the response would be:

```
SYSCFG CONFIG,GPIB,6
```

Tester Communication RS232 Baud Rate

Set command

Command format `SYSCFG<ws>CONFIG<,>RS232<,><baud rate>`

<baud rate>

1200

2400

4800

9600

19200

38400

57600

Example To set the baud rate to 19200 the command would be:

```
SYSCFG CONFIG,RS232,19200
```

Request command

Command format `SYSCFG?<ws>CONFIG<,>RS232`

Response The response will be returned in the form of the command to set that state.

Example `SYSCFG? CONFIG,RS232`

Response If the baud rate is 38400 the response would be:

```
SYSCFG CONFIG,RS232,38400
```

RSMODE (Tester Rear Panel RS232 Mode)

This command will set the rear panel RS232 into one of the following modes:

EXTCOM	The connector can be used for GPIB type control and communication
EXTHCI	The connector is used to send HCI commands directly to the Bluetooth core. In this mode the standalone MT8850A/MT8852A can not communicate to the internal Bluetooth core. In this mode the baud rate is 57600

Set command

Command format `SYSCFG<ws>CONFIG<,>RSMODE<,><mode>`

<mode>	EXTCOM
	EXTHCI

Example To set the connector to be used for GPIB commands the command would be:

```
SYSCFG CONFIG,RSMODE,EXTCOM
```

Request command

Command format SYSCFG?<ws>CONFIG<,>RSMODE

Response The response will be returned in the form of the command to set that state.

Example SYSCFG? CONFIG,RSMODE

Response If the mode is EXTHCI the response would be:

SYSCFG CONFIG,RSMODE,EXTHCI

Tester Measurement System Power Range

This command allows the power range of the measurement system to be controlled if required. There are six power ranges plus auto ranging which is the default.

Set command

Command format SYSCFG<ws>CONFIG<,>RANGE<,><setting>

<setting>

0	Hold present range
1	Hold on range 1
2	Hold on range 2
3	Hold on range 3
4	Hold on range 4
5	Hold on range 5
6	Hold on range 6
AUTO	Auto ranging

Example To set the range to auto the command would be:

SYSCFG CONFIG,RANGE,AUTO

Request command

Command format SYSCFG?<ws>CONFIG<,>RANGE

Response The response is returned in the form of the command to set that state.

Example SYSCFG? CONFIG,RANGE

Response If the range was held at range 1 then the response would be:

SYSCFG? CONFIG,RANGE,1

Mod Index Setting

The MT8850A/MT8852A default setting for the modulation index of the communication channel is 0.35. This command allows this value to be changed.

Set command

Command format SYSCFG<ws>CONFIG<,>MODINDEX<,><setting>

<setting> 0.25 to 0.40

Example To set the mod index to 0.38 the command would be:

```
SYSCFG CONFIG,MODINDEX,0.38
```

Request command

Command format

```
SYSCFG? CONFIG,MODINDEX
```

Response The response is returned in the form of the command to set that state.

Example

```
SYSCFG? CONFIG,MODINDEX
```

Response If the Mod index was set to 0.32 then the response would be:

```
SYSCFG CONFIG,MODINDEX,0.32
```

Poll/Null Measurement Mode

This command has been maintained to ensure compatibility with software version 1.00. It should not be used in any of the new test programs and ideally should be replaced in existing test programs with the SCRIPTMODE command detailed in chapter 5 of this manual.

This command allows the MT8850A/MT8852A to make measurements on the POLL/NULL sequence used to maintain the Bluetooth link rather than using Test mode. This allows some measurements to be carried out even if test mode has not been fully implemented.

This command puts every script into NULL packet mode. Refer to the SCRIPTMODE command description.

Set command

Command format SYSCFG<ws>CONFIG<,>NPMODE<,><setting>

<setting> ON: Sets scripts 3 to 10 to NULL packet mode.
OFF: Sets scripts 3 to 10 to standard mode.

Example To set the null packet measurement mode to ON the command would be:

```
SYSCFG CONFIG,NPMODE,ON
```

Request command

Command format SYSCFG?<ws>CONFIG<,>NPMODE

Remarks If scripts 3 to 10 are all in NULL packet mode, this will return ON, otherwise OFF.

Response The response is returned in the form of the command to set that state.

Example `SYSCFG? CONFIG,NPMODE`

Response If the null packet measurement mode was OFF the response would be:

`SYSCFG CONFIG,NPMODE,OFF`

Filter Setting

This command is used to change the measurement bandwidth when performing the frequency receiver tests (Initial Carrier, Carrier Drift and Modulation Index). The default measurement bandwidth is set to 2MHz, but this can be changed to 1.3MHz.

Set command

Command format `SYSCFG<ws>CONFIG,FILTER,<type>`

where `<type>` is 2MHZ or 1.3MHZ

Example Set the measurement bandwidth to 2MHZ:

`SYSCFG CONFIG, FILTER, 2MHZ`

Request command

To request the filter type currently being used, use the command:

Command format `SYSCFG?<ws>CONFIG,FILTER`

Example `SYSCFG? CONFIG, FILTER`

Response `SYSCFG CONFIG, FILTER, 2MHZ`

Link Timeout Setting

This command sets the amount of time the unit waits after loosing a (Bluetooth) link before abandoning the connection. This command is used before a link is made.

Set command

Command format SYSCFG<ws>CONFIG<,>LKTIMO<,><timeout>

Timeout 1 to 40 seconds. Default is 10. (Integers only)

Example To set the link supervision timeout to 25 seconds:
SYSCFG CONFIG,LKTIMO,25

Request command

Command format SYSCFG?<ws>CONFIG<,>LKTIMO

Response The response is in the form of the command to set that value

Example If the timeout value is 15 seconds the response would be
SYSCFG CONFIG,LKTIMO,15

Mod Index Setting

The MT8850A/MT8852A default setting for the modulation index of the communication channel is 0.35. This command allows this value to be changed.

Set command

Command format `SYSCFG<ws>CONFIG<,>MODINDEX<,><setting>`

<setting> 0.25 to 0.40

Example To set the mod index to 0.38 the command would be:

```
SYSCFG CONFIG,MODINDEX,0.38
```

Request command

Command format `SYSCFG? CONFIG,MODINDEX`

Response The response is returned in the form of the command to set that state.

Example `SYSCFG? CONFIG,MODINDEX`

Response If the Mod index was set to 0.32 then the response would be:

```
SYSCFG CONFIG,MODINDEX,0.32
```

Poll/Null Measurement Mode

This command has been maintained to ensure compatibility with software version 1.00. It should not be used in any of the new test programs and ideally should be replaced in existing test programs with the SCRIPTMODE command detailed in chapter 5 of this manual.

This command allows the MT8850A/MT8852A to make measurements on the POLL/NULL sequence used to maintain the Bluetooth link rather than using Test mode. This allows some measurements to be carried out even if test mode has not been fully implemented.

This command puts every script into NULL packet mode. Refer to the SCRIPTMODE command description.

Set command

Command format `SYSCFG<ws>CONFIG<,>NPMODE<,><setting>`

<setting> ON: Sets scripts 3 to 10 to NULL packet mode.
OFF: Sets scripts 3 to 10 to standard mode.

Example To set the null packet measurement mode to ON the command would be:

```
SYSCFG CONFIG,NPMODE,ON
```

Request command

Command format `SYSCFG?<ws>CONFIG<,>NPMODE`

Remarks If scripts 3 to 10 are all in NULL packet mode, this will return ON, otherwise OFF.

Response The response is returned in the form of the command to set that state.

Example `SYSCFG? CONFIG,NPMODE`

Response If the null packet measurement mode was OFF the response would be:

`SYSCFG CONFIG,NPMODE,OFF`

Filter Setting

This command is used to change the measurement bandwidth when performing the frequency receiver tests (Initial Carrier, Carrier Drift and Modulation Index). The default measurement bandwidth is set to 2MHz, but this can be changed to 1.3MHz.

Set command

Command format `SYSCFG<ws>CONFIG,FILTER,<type>`

where `<type>` is 2MHZ or 1.3MHZ

Example Set the measurement bandwidth to 2MHZ:

`SYSCFG CONFIG, FILTER, 2MHZ`

Request command

To request the filter type currently being used, use the command:

Command format `SYSCFG?<ws>CONFIG,FILTER`

Example `SYSCFG? CONFIG, FILTER`

Response `SYSCFG CONFIG, FILTER, 2MHZ`

Link Timeout Setting

This command sets the amount of time the unit waits after loosing a (Bluetooth) link before abandoning the connection. This command is used before a link is made.

Set command

Command format SYSCFG<ws>CONFIG<,>LKTIMO<,><timeout>

Timeout 1 to 40 seconds. Default is 10. (Integers only)

Example To set the link supervision timeout to 25 seconds:
SYSCFG CONFIG,LKTIMO,25

Request command

Command format SYSCFG?<ws>CONFIG<,>LKTIMO

Response The response is in the form of the command to set that value

Example If the timeout value is 15 seconds the response would be
SYSCFG CONFIG,LKTIMO,15

DISPSOUND (Tester Display and Sound Control)

This group of commands configures the following:

- Display contrast (CONTRAST)
- Key click (KEY)
- Error beep on illegal entry (ENTRY)
- User text display (TEXT, TEXTS)
- Follow test mode (FOLTST)

Display Contrast

This command allows the contrast of the MT8850A/MT8852A LCD contrast to be altered.

Set command

Command format `SYSCFG<ws>DISPSOUND<,>CONTRAST<,><contrast>`

<contrast>

1 to 10	
UP	for increment by one
DOWN	for decrement by one

Example To set the contrast to 8 the command would be:

```
SYSCFG DISPSOUND,CONTRAST,8
```

Request command

Command format `SYSCFG?<ws> DISPSOUND<,>CONTRAST`

Response The response is returned in the form of the command to set that state

Example

```
SYSCFG? DISPSOUND<,>CONTRAST
```

Response If contrast was 5 the response would be:

```
SYSCFG DISPSOUND<,>CONTRAST,5
```

Key Click

Set command

This command turns ON or OFF the instrument key click

Command format `SYSCFG<ws> DISPSOUND<,>KEY<,><state>`

<state> ON or OFF

Example To turn on the key click the command would be:

```
SYSCFG DISPSOUND,KEY,ON
```

Request command

Command format `SYSCFG?<ws> DISPSOUND<,>KEY`

Response The response is returned in the form of the command to set that state

Example `SYSCFG? DISPSOUND,KEY`

Response If key click is OFF the response would be:

`SYSCFG DISPSOUND,KEY,OFF`

Error Beep on Illegal Entry

Set command

Command format `SYSCFG<ws> DISPSOUND<,>ENTRY<,><state>`

<state> ON or OFF

Example To set the entry error beep on the command would be:

`SYSCFG DISPSOUND,ENTRY,ON`

Request command

Command format `SYSCFG?<ws> DISPSOUND<,>ENTRY`

Response The response is returned in the form of the command to set that state

Example `SYSCFG? DISPSOUND,ENTRY`

Response If the state was OFF the response would be:

`SYSCFG DISPSOUND,ENTRY,OFF`

User Text State

Set command

Command format `SYSCFG<ws> DISPSOUND<,>TEXTS<,><state>`

<state> ON or OFF

Example To set the entry error beep on the command would be:

`SYSCFG DISPSOUND,TEXTS,ON`

Request command

Command format `SYSCFG?<ws> DISPSOUND<,>TEXTS`

Response The response is returned in the form of the command to set that state

Example `SYSCFG? DISPSOUND,TEXTS`

Response If the state was OFF the response would be:

`SYSCFG DISPSOUND,TEXTS,OFF`

User Text

Set command

Command format SYSCFG<ws> DISPSOUND<,>TEXT<,><text>

<text> Up to ASCII 20 characters.

Remarks Defines the text string that will be displayed using the TEXTS command.

Example To set the text string to BLUETOOTH the command would be:

```
SYSCFG DISPSOUND,TEXT,BLUETOOTH
```

Request command

Command format SYSCFG?<ws> DISPSOUND<,>TEXT

Response The response is returned in the form of the command to set that state

Example

```
SYSCFG? DISPSOUND,TEXT
```

Response If the text was BLUETOOTH the response would be:

```
SYSCFG DISPSOUND,TEXT,BLUETOOTH
```

FOLTST (Follow Test Mode)

Set command

This command is used to set the follow test display mode. This can be set to OFF, when the current results page will be displayed whilst the tests are run, SUM when the summary results page for each test run will be displayed, or EXT when the extended results page for each test run will be displayed.

Command format SYSCFG<ws>DISPSOUND<,>FOLTST<,><mode>

<mode>

OFF

SUM

EXT

Example To set the follow test mode to Summary, the command would be:

SYSCFG DISPSOUND,FOLTST,SUM

Request command

This command is used to request the follow test display mode. The present value is returned.

Command format SYSCFG?<ws>DISPSOUND<,>FOLTST

Response OFF, SUM, EXT

Example SYSCFG? DISPSOUND,FOLTST

Response If the follow test mode is Extended:

SYSCFG DISPSOUND,FOLTST,EXT

EUTADDR (EUT Address)

This command is used to set the EUT address when the EUT address source is set to manual. If the source is not set to manual the command will be ignored and an execution error given.

Set command

Command format `SYSCFG<ws> EUTADDR<,><address>`

<address> 6 byte hexadecimal string containing the address.

Example If the Bluetooth address is 0x000123ABCDEF the command would be:

```
SYSCFG EUTADDR, 000123ABCDEF
```

Request command

This command is used to request the EUT address. The present value is returned, which could be the power up initialisation value of zeros. The only indication of a valid BT address is after a connection has been made.

Command format `SYSCFG? EUTADDR`

Response 6 byte (12 character address) i.e. 000123ABCDEF

Example `SYSCFG? EUTADDR`

Response If the address is 000123ABCDEF

```
SYSCFG? EUTADDR, 000123ABCDEF
```

EUTFEAT (EUT supported features)

This section allows the operator to read the supported features of the EUT.

Request command

Command format `SYSCFG?<ws>EUTFEAT`

Response The response is a 16-character string representation of a hexadecimal number containing the features information coded in the form specified in the Bluetooth HCI specification.

Example: `00000000005403FB`

EUTNAME (EUT User Friendly Name Request)

This command returns the user-friendly name of the EUT if it is available. When a test or script is run the standard connection procedure requests the user-friendly name. If the connection has been made using the auxiliary commands then the auxiliary user friendly name command can be used to read the user-friendly name.

Command format	`SYSCFG?<ws>EUTNAME`
Response	The User friendly name is returned as a text string of up to 248 characters.
Example	`SYSCFG? EUTNAME`
Response	The User friendly name is returned as a text string of up to 248 characters. If no user-friendly name is available, the string "not available" is returned.

EUTRS232 (EUT RS232 HCI Set Up)

This section allows the operator to set the baud rate of the HCI RS232 connection to the EUT.

Set command

Command format `SYSCFG<ws>EUTRS232<,><baud rate>`

<baud rate>

- 1200
- 2400
- 4800
- 9600
- 19200
- 38400
- 57600
- 115200
- 230400 (MT8852A only)
- 460800 (MT8852A only)
- 921600 (MT8852A only)

Remarks The RS232 HCI link does not at present support the Bluetooth RS232 protocol negotiation and compression or handshaking.

Example To set the baud rate to 9600 the command would be:

```
SYSCFG EUTRS232,9600
```

Request command

Command format `SYSCFG?<ws>EUTRS232`

Response The response is returned in the form of the command to set that state.

Example `SYSCFG? EUTRS232`

Response For baud rate set to 19200 the response would be:

```
SYSCFG EUTRS232,19200
```

EUTSRCE (EUT Address Source)

Command format `SYSCFG<ws>EUTSRCE<,><source>`

<source>

MANUAL

RS232

INQUIRY

USB (MT8852A only)

Remarks This command is used to set the source of the EUT address. This setting is also used to tell the MT8850A/MT8852A whether it will be controlling the EUT via an HCI connection to run the tests using the HCI commands as described in the Bluetooth HCI specification (RS232 or USB).

To run the tests the MT8850A/MT8852A needs to make a connection with the EUT using one of methods described below.

MANUAL: The address of the EUT is entered via the front panel or GPIB.

RS232: The EUT address is acquired via the RS232 HCI link and the EUT is initialised for tests.

INQUIRY: The EUT Bluetooth address is obtained by performing an inquiry. If the EUT address source is set to inquiry, a GPIB Run command will produce an execution error if the number of responses is set to greater than "1".

USB (MT8852A only): The EUT address is acquired via the USB HCI link and the EUT is initialised for tests.

Request command

Command format `SYSCFG?<ws>EUTSRCE`

Response Response is in the form of the command to set that state.

Example If the EUT address source was manual the response would be:

```
SYSCFG? EUTSRCE
```

Response

```
SYSCFG EUTSRCE,MANUAL
```

HWINFO (Hardware information)

This command returns the RF PCB serial number and revision and the Control PCB serial number and revision.

Request command

Command format `SYSCFG?<ws>HWINFO`

Response The information is returned in the order:

`<RF PCB ser no.>,<RF PCB rev>,`

`<control PCB ser no.>,<control PCB rev>`

Example If the information is as follows, the response would be:

RF PCB serial number: `01090021`
RF PCB revision: 4
Control PCB serial number: `6K20`
Control PCB revision: 3

Response `SYSCFG HWINFO,01090021,4,6K20,3`

IDENT (Tester Identity)

This command allows the operator to read the identity, serial number and firmware version number of the Anritsu Bluetooth test set. The response is the same as the standard '*IDN?' command. See page 4-5.

Request command

Command format `SYSCFG?<ws>IDENT`

Response A string is returned containing the manufacturer's name, the model number, the serial number (10 digits), and the software revision. Commas separate the items.

Example: `ANRITSU,MT8850A,6K00000031,2.51`

INQSET (Inquiry Set Up)

This command allows the inquiry action to be configured. The inquiry command is used to look for any Bluetooth device that is looking for an inquiry. The inquiry will continue once initiated until either the maximum number of responses have been given or the maximum period of time has expired. The inquiry can also be terminated by the inquiry stop auxiliary command. The sub parameters are:

RNUM	Number of responses before inquiry termination
TIMEOUT	Max period over which the inquiry will be done
NAME	Whether to access a common name during inquiry process

RNUM (Number of Response)

The inquiry can be configured to stop after a maximum number of responses. The command parameters used to set this value.

Set command

Command format `SYSCFG<ws>INQSET<,>RNUM<,><value>`

<value> 1 to 50

Example To set the maximum number of responses to 12 the command would be:

```
SYSCFG INQSET,RNUM,12
```

Request command

To request the number of responses an inquiry would return use the command:

Command format `SYSCFG?<ws><INQSET<,>RNUM`

Example

```
SYSCFG? INQSET,RNUM
```

Response If the maximum number of responses set was 3 the response would be:

```
SYSCFG INQSET,RNUM,3
```

TIMEOUT (Maximum Inquiry Time)

The inquiry can be configured to stop after a maximum period of time. The command parameters used to set this value.

Set command

Command format `SYSCFG<ws>INQSET<,>TIMEOUT<,><value>`

<value> 1 to 60 (timeout in seconds)

Example To set the inquiry time to approximately 12 seconds, the command would be:

```
SYSCFG INQSET,TIMEOUT,12
```

Request command

To request the timeout setting of an inquiry would return use the command:

Command format SYSCFG?<ws>INQSET<,>TIMEOUT

Example SYSCFG? INQSET,TIMEOUT

Response If the maximum timeout was set to 3 the response would be:

SYSCFG INQSET,TIMEOUT,3

NAME (Common Name During Inquiry)

This parameter will control whether the user-friendly name will be requested for each of the inquired devices after and inquiry has ended.

Set command

Command format SYSCFG<ws>INQSET<,>NAME<,><state>

<state> ON or OFF

Example To request the user friendly name after the inquiry the command would be:

SYSCFG INQSET,NAME,ON

Request command

To request the inquiry name status use the command:

Command format SYSCFG?<ws>INQSET<,>NAME

Example SYSCFG? INQSET,NAME

Response If this state was set off the response would be:

SYSCFG INQSET,NAME,OFF

PAGSET (Page Setting)

This group of commands configures the following:

EUTPSRM (EUT Page Scan Repetition Mode)

PAGETO (Page Timeout Setting)

EUTPSRM (EUT Page Scan Repetition Mode)

This command is used to set the EUT page scan repetition mode.

Set command

Command format `SYSCFG<ws>PAGSET,EUTPSRM<,><psrm>`

<psrm>

R0

R1

R2

Example To set the page scan repetition mode to R1, the command would be:

`SYSCFG PAGSET,EUTPSRM,R1`

Request command

This command is used to request the EUT page scan repetition mode. The present value is returned.

Command format `SYSCFG?<ws>PAGSET,EUTPSRM`

Response R0, R1, R2

Example `SYSCFG? PAGSET,EUTPSRM`

Response If the page scan repetition mode is R1

`SYSCFG PAGSET,EUTPSRM,R1`

PAGETO (Page Timeout Setting)

This command changes the page timeout used for making a connection. When requesting a test run or a connection, the MT8850A/MT8852A makes two connection attempts. The time set here is the total paging time for both attempts.

Set command	
Command format	SYSCFG PAGSET, PAGETO<,><time>
Timeout	2 to 30 seconds (Integers only)
Request command	
Command format	SYSCFG? PAGSET, PAGETO
Response	The response is in the form of the command to set that value
Example	If the page timeout value is 10 seconds the response would be SYSCFG? PAGSET, PAGETO, 10

PINCODE (PIN Code)

Set command

This command sets the PIN Code

Command format	SYSCFG<ws>,AUTH,PINCODE,<Variable>
Variable	Numeric Value of PIN
Example	SYSCFG AUTH,PINCODE,0000

Request command

This command reads the PIN code.

Command format	SYSCFG?<ws>AUTH,PINCODE
Example	SYSCFG? AUTH,PINCODE
Response	SYSCFG AUTH,PINCODE,0000

PINLEN (PIN Code Length)

Set command

This command sets the PIN Length

Command format	`SYSCFG<ws>,AUTH,PINLEN,<Variable>`
Variable	Integer 1 - 16
Example	SYSCFG AUTH,PINLEN,04

Request command

This command reads the PIN length.

Command format	`SYSCFG?<ws>AUTH,PINLEN`
Example	SYSCFG? AUTH, PINLEN
Response	`SYSCFG AUTH,PINLEN,04`

SCPTSET (Script Set Up)

This command group allows the set up of the action of the loop run command and the form in which frequencies will be displayed and reported over GPIB.

Loop test/script stop on fail

Loop test/script continuously

Loop test/script a defined number of times

Frequency display mode

LPSTFAIL (Loop test/script stop on fail)

When running a test or script in loop mode this command allows the testing to stop on a test failing.

Set command

Command format `SYSCFG<ws>SCPTSET<,>LPSTFAIL<,><state>`

<state> ON or OFF

Example To set the stop on fail to ON the command would be:

`SYSCFG SCPTSET,LPSTFAIL,ON`

Request command

Command format `SYSCFG?<ws>SCPTSET,LPSTFAIL`

Response The response is returned in the form of the command to set that state.

Example `SYSCFG? SCPTSET,LPSTFAIL`

Response If the stop on fail was OFF the response would be:

`SYSCFG SCPTSET,LPSTFAIL,OFF`

Loop Test/Script Continuously

When running a test or script in loop mode this command allows the test or script to run continuously. When this is ON the loop count will not apply.

Set command

Command format `SYSCFG<ws>SCPTSET<,>LPCONT<,><state>`

<state> ON or OFF

Example To set the loop continuously to ON the command would be:

`SYSCFG SCPTSET,LPCONT,ON`

Request command

Command format `SYSCFG?<ws>SCPTSET,LPCONT`

Response The response is returned in the form of the command to set that state.

Example SYSCFG? SCPTSET,LPCONT

Response If the loop continuous state was OFF the response would be:

SYSCFG SCPTSET,LPCONT,OFF

Loop Count

When running a test or script in loop mode this command allows the test or script to run a number of times rather than continuously. When this loop continuous is ON the loop count does not apply.

Set command

Command format SYSCFG<ws>SCPTSET<,>LOOPCNT<,><value>

<value> 2 to 100 (10 default)

Example To set the loop count to 50 the command would be:

SYSCFG SCPTSET,LOOPCNT,50

Request command

Command format SYSCFG?<ws>SCPTSET,LOOPCNT

Response The response is returned in the form of the command to set that state.

Example SYSCFG? SCPTSET,LOOPCNT

Response If the loop count value is 7 the response would be:

SYSCFG SCPTSET,LOOPCNT,7

Frequency Display Mode

This will change the way that the Bluetooth channels are reported and displayed between the frequency and the channel number. Channel 0 = 2402 MHz and channel 78 =2480 MHz.

Set command

Command format SYSCFG<ws>SCPTSET<,>FRQDISP<,><state>

<state>	FREQ	Display frequency
	CHAN	Channel number

Example To set the frequency display mode to frequency the command would be:

SYSCFG SCPTSET,FRQDISP,FREQ

Request command

Command format SYSCFG?<ws>SCPTSET,FRQDISP

Response The response is returned in the form of the command to set that state.

Example SYSCFG? SCPTSET,FRQDISP

Response

If the frequency display mode is channel number the response would be:

```
SYSCFG SCPTSET,FRQDISP,CHAN
```

VERDATE (Tester Firmware Version and Date Stamp)

This command returns the version and date stamp information for all the modules within the Anritsu Bluetooth test set

Command format

```
SYSCFG<ws>VERDATE,Bbbootstamp<,>Bbarmstamp><,>
<BBFPGAstamp><,><RFFPGAstamp><,><DSPversion>
```

Bbbootstamp	Base Band boot code date and time stamp
Bbarmstamp	Base Band ARM code date and time stamp
BBFPGAstamp	Base Band FPGA date and time stamp
RFFPGAstamp	RF FPGA date and time stamp
DSPversion	DSP software version number

Example

```
SYSCFG VERDATE,14/05/2001,11:18:06,22/08/2001
13:07:50,04/07/2001 09:17:22,04/09/2001
17:20:54,02.12
```

Chapter 7. SCO Configuration (MT8852A only)

This chapter provides details of the SCO configuration command and the associated parameters. SCO connections are used to carry audio data. A SCO connection can only be set up when an ACL connection has been made between the two units. The commands are listed in alphabetical order as detailed below.

SCOCFG (Set SCO Configuration)

Command format `SCOCFG<ws><config selection>[<,><parameters>……]`

<config selection>

- AIRCODE SCO air code format
- BITPOSN SCO bit position
- INPUTCODE SCO input code format
- INPUTDATA SCO input data format
- LBMODE Loopback mode
- PKTTYPE SCO packet type
- SAMPSIZE SCO sample size
- TONEGEN SCO tone generator

AIRCODE (SCO Air Code Format)

Set command

Command format SCOCFG<ws>AIRCODE<,><format>

<format>

CVSD

ULAW

ALAW

Remarks This command is used to set the format to be used over air for the SCO connection. Both ends of the SCO link must use the same air code format.

The value will also be used for the EUT if the MT8852A is controlling an EUT via the front panel connection.

The command is only allowed when there is an ACL connection but no SCO connection.

Request command

Command format SCOCFG?<ws>AIRCODE

Response Response is in the form of the command to set that state.

Example If the air code format is CVSD the response would be:

Response SCOCFG AIRCODE,CVSD

BITPOSN (SCO Linear PCM Bit Position)

Set command

Command format `SCOCFG<ws>BITPOSN<,><posn>`

<posn>

0-7

Remarks This command is used to set the bit offset position for linear PCM input. The PCM bit position is the number of bit positions that the MSB of the sample is away from starting MSB (only for Linear PCM).

The value is only used by the MT8852A when it is controlling an EUT via the front panel connection.

The command can only be used when there is an ACL connection (and if the EUT is controlled via the front panel, no SCO connection).

Request command

Command format `SCOCFG?<ws>BITPOSN`

Response Response is in the form of the command to set that state.

Example If the bit position is set to 0, the response would be:

Response `SCOCFG BITPOSN,0`

INPUTCODE (SCO Input Coding Format)

Set command

Command format SCOCFG<ws>INPUTCODE<,><format>

<format>

LINEAR

ULAW

ALAW

Remarks This command is used to set the input coding format for the audio connection.

The value is only used by the MT8852A when it is controlling an EUT via the front panel connection.

The command can only be used when there is an ACL connection (and if the EUT is controlled via the front panel, no SCO connection).

Request command

Command format SCOCFG?<ws>INPUTCODE

Response Response is in the form of the command to set that state.

Example If the input coding format is set to ULAW, the response would be:

Response SCOCFG INPUTCODE,ULAW

INPUTDATA (SCO Input Data Format)

Set command

Command format SCOCFG<ws>INPUTDATA<,><format>

<format>

1SCOMP

2SCOMP

SIGNMAG

Remarks This command is used to set the input data format for the audio connection to either 1's compliment, 2's compliment or sign magnitude.

The value is only used by the MT8852A when it is controlling an EUT via the front panel connection.

The command can only be used when there is an ACL connection (and if the EUT is controlled via the front panel, no SCO connection).

Request command

Command format SCOCFG?<ws>INPUTDATA

Response Response is in the form of the command to set that state.

Example If the input data format is set to sign magnitude, the response would be:

Response SCOCFG INPUTDATA,SIGNMAG

LBMODE (Loopback Mode)

Set command

Command format SCOCFG<ws>LBMODE<,><status>

<status>

ON

OFF

Remarks This command is used to set the unit into remote loopback mode. In this mode all data received over air (including SCO data) will be looped back and sent back out over air.

The command is only allowed when there is an ACL connection but no SCO connection.

Request command

Command format SCOCFG?<ws>LBMODE

Response Response is in the form of the command to set that state.

Example If the unit is in loopback mode, the response would be:

Response SCOCFG LBMODE,ON

PKTTYPE (SCO Packet Type)

Set command

Command format `SCOCFG<ws>PKTTYPE<,><type>`

<type>

HV1

HV2

HV3

Remarks This command is used to set the SCO packet type. Only one packet type can be selected.

Note: The packet type selected restricts the number of SCO connections available, as follows:

Pkt. Type	Max Connections available
HV1	1
HV2	2
HV3	3

The command is only allowed when there is an ACL connection but no SCO connection.

Request command

Command format `SCOCFG?<ws>PKTTYPE`

Response Response is in the form of the command to set that state.

Example If the packet type is set to HV3, the response would be:

Response `SCOCFG PKTTYPE,HV3`

SAMPSIZE (SCO Input Sample Size)

Set command

Command format SCOCFG<ws>SAMPSIZE<,><size>

<size>

8BIT

16BIT

Remarks This command is used to set the input sample size for the audio connection to either 8 bit or 16 bit.

The value is only used by the MT8852A when it is controlling an EUT via the front panel connection.

The command can only be used when there is an ACL connection (and if the EUT is controlled via the front panel, no SCO connection).

Request command

Command format SCOCFG?<ws>SAMPSIZE

Response Response is in the form of the command to set that state.

Example If the input sample size is set to 16 bit, the response would be:

Response SCOCFG SAMPSIZE,16BIT

TONEGEN (SCO Tone Generator)

Set command

Command format SCOCFG<ws>TONEGEN<,><state>

<state>

ON

OFF

Remarks This command is used to turn the SCO tone generator on and off.

It is only allowed when there is an ACL and a SCO connection.

Request command

Command format SCOCFG?<ws>TONEGEN

Response Response is in the form of the command to set that state.

Example If the tone generator is on, the response would be:

Response SCOCFG TONEGEN,ON

Chapter 8. SCO Connections (MT8852A only)

This chapter provides details of the SCO connect and disconnect commands. A SCO connection can only be created when an ACL connection already exists between the two units.

The following list is an example GPIB command sequence to create a SCO connection:

```
CONNECT
GETEUTFEAT
[SCOCFG … ]
SCOCONN 1
```

SCOCONN (SCO Connect)

Set command

Command format `SCOCONN<ws><channel>`

<channel>

`1-3`

Remarks This command is used to create a SCO connection on the specified channel. When the connection has been completed the SCC bit in the CHG register will be set.

The current state of the SCO connections can be obtained by using the STATUS command.

SCODISC (SCO Disconnect)

Set command

Command format `SCODISC<ws><channel>`

<channel>

`1-3`

Remarks This command is used to terminate a SCO connection on the specified channel. When the disconnection has been completed the SCC bit in the CHG register will be set.

The current state of the SCO connections can be obtained by using the STATUS command.

Chapter 9. Signal Generator Mode and CW Measurement

Signal Generator Mode

The MT8850A/MT8852A can be used to generate fixed data patterns at calibrated levels. The OPMD command can be used to put the MT8850A/MT8852A into signal generator mode although using the SIGGEN command to set the generator parameters will also put the MT8850A/MT8852A into signal generator mode.

The SIGGEN command can be used to set the following operation parameters.

- Data pattern
- Bluetooth channel / frequency
- Modulation index of the transmission
- Transmitted power level
- RF output control

Command format

```
SIGGEN<ws><pattern><,><channel mode><,><channel>
<,><modindex><,> <pwr><,><rfstate>
```

<pattern>

- DATACW
- DATA10101010
- DATA11110000
- DATAPRBS9
- DATAPRBS15

<channel mode>	CHAN
	FREQ
<channel>	-10 to 98 (2400 MHz to 2500 MHz)
<mod index>	0.25 to 0.40
<pwr>	0 to -90 dBm
<rfstate>	ON or OFF

Example

To set up the MT8850A/MT8852A to output a 101010101 data stream on channel 3 with 0.24 mod index at a power level of -20 dBm and to turn the RF output ON the use following command:

```
SIGGEN DATA10101010,CHAN,4,0.24,-20,ON
```

Note: Under certain circumstances it may be necessary to send the command string twice.

Remarks SIGGEN is used to configure the Signal Generator function. To enter and exit the Signal Generator mode use OPMD and OPMD? (see chapter 5).

Command format `SIGGEN?`

Response The response is returned in the form of the command to set that state

Example `SIGGEN DATA10101010,CHAN,4,0.32,-20,ON`

CW Measurement Mode

The MT8850A/MT8852A can be used to measure a fixed frequency modulation signal. Power, frequency, and modulation can be measured. The OPMD command can be used to put the MT8850A/MT8852A into CW measurement mode, although using the CWMEAS command to set the measurement parameters will also put the MT8850A/MT8852A into CW measurement mode.

The CWMEAS command is used to set the Bluetooth channel/frequency and measurement gate width parameters.

Command format `CWMEAS<ws><channel mode><,><channel><,><gate width>`

<channel mode>	CHAN
	FREQ
<channel>	-2 to 98 (2400 MHz to 2500 MHz)
<gate width>	1 ms to 10 ms

Example To set up the MT8850A/MT8852A to measure on channel 92 with a gate width of 5 ms use the following command.

`CWMEAS,CHAN,92,5e-3`

Remarks CWMEAS is used to configure CW Measurement mode. To enter and exit CW measurement mode use OPMD and OPMD? (see chapter 5.).

Command format `CWMEAS?`

Response The response is returned in the form of the command to set that state

Example If set to measure frequency 2494 MHz with a gate width of 4 ms, the response would be:

`CWMEAS FREQ,2494e6,4e-3`

The CWRESULT command is used to read the CW measurement result from the MT8850A.

Command format	`CWRESULT <measurement type>`
<measurement type>	FREQOFF (frequency offset from the frequency set in CWMEAS)
Response	<Frequency value in Hz to 2 decimal places>
<measurement type>	POWER
Response	<Power value in dBM to 2 decimal places>
<measurement type>	MOD
Response	<Positive modulation in Hz to 2 decimal places> <,>< Negative modulation in Hz to 2 decimal places>

Chapter 10. Test Configuration

This chapter is split into the following four sections.

- Configuring tests in standard mode.

Output power	(TRM/CA/01/C)
Power control	(TRM/CA/03/C)
Initial carrier	(TRM/CA/08/C)
Carrier frequency drift	(TRM/CA/09/C)
Single slot sensitivity	(RCV/CA/01/C)
Multi-slot sensitivity	(RCV/CA/02/C)
Modulation index	(TRM/CA/07/C)
Input power	(RCV/CA/06/C)

- Configuring tests in single payload mode.

  Details of the SPCFG command used to configure single payload mode.

- Test limit variables.

  Details of the limit related variables for each of the eight tests.

- Parameter variables.

  Details of the non-limit type variables.

Configuring Tests in Standard Mode

Output Power Test Configuration (OPCFG)

The output power test performs power measurements on the EUT transmitted packets in one of three ways. The link is frequency hopping in each case.

With Hopping On mode set to "Defined" the MT8850A/MT8852A measures power only when the link hops to one of the frequencies defined on the LOW, MEDIUM and HIGH set up screen. Although the measurements are only made at the defined frequencies, it is still a hopping link. The number of packets measured at each frequency is set by the user in the "Number of packets" field. This is the test method described in the Bluetooth RF Test Specification.

With Hopping On mode set to "All" the MT8850A/MT8852A measures the power at every one of the 79 frequencies in the Bluetooth channel structure. The number of packets measured at each frequency is set by the user in the "Number of packets" field.

With Hopping On mode set to "Any" the MT8850A/MT8852A measures the power at the next frequency that the link hops to after the previous power measurement has been completed. The total number of packets measured is set by the user in the "Number of packets" field. This is typically the shortest of the three options as there is no requirement to measure a large number of packets at specified frequencies.

The MT8850A/MT8852A can perform the test using either loopback test controls or TX test controls. The default form for this test is to use loopback. The following test description is described using the default test control. The MT8850A/MT8852A transmits a pseudo random data payload (PRBS 9) of the longest supported type (DH5, DH3 or DH1) or the selected packet type, to the EUT. The EUT loops back the data at its maximum output power and the MT8850A/MT8852A measures the received power. This test is performed while hopping, and the test is repeated until the requested number of packets has been measured on each of the selected frequencies. The LOW, MEDIUM and HIGH frequencies relate to the default frequencies specified in the Bluetooth RF test specification. The MT8850A/MT8852A allows all these frequencies to be changed from their default values.

Set command

Command format

```
OPCFG<ws><scriptnumber><,><variable><, ·
[<params>.....]
```

<script number> 3 to 10
<variable>

LRXFREQ	Low RX frequency setting.
MRXFREQ	Medium RX frequency setting.
HRXFREQ	High RX frequency setting.
HOPMODE	Use Defined, All, or Any MT8850A/MT8852A custom mode
HOPPING	Hopping stages of the test.
LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test

HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the EUT low frequency TX value
MTXFREQ	Set the EUT medium frequency TX value
HTXFREQ	Set the EUT high frequency TX value
NUMPKTS	Number of packets
PKTTYPE	Packet type to use in performing test
TSTCTRL	Test control to use in test
AVGMXLIM	Average power high limit
AVGMNLIM	Average power low limit
PEAKLIM	Peak power limit
DEFAULT	Set the test to its default settings (set only)

Example

To set the DEFAULT OPCG the command would be:

```
OPCFG 3,DEFAULT,
```

Request command

Command format

```
OPCFG?<ws><scriptnumber><,><variable>
```

<script number> 1 to 10
<variable>

LRXFREQ	Low RX frequency setting.
MRXFREQ	Medium RX frequency setting.
HRXFREQ	High RX frequency setting.
HOPMODE	Use Defined, All, or Any MT8850A custom mode
HOPPING	Hopping stages of the test.
LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the EUT low frequency TX value
MTXFREQ	Set the EUT medium frequency TX value
HTXFREQ	Set the EUT high frequency TX value
NUMPKTS	Number of packets
PKTTYPE	Packet type to use in performing test
TSTCTRL	Test control to use in test
AVGMXLIM	Average power high limit
AVGMNLIM	Average power low limit

PEAKLIM Peak power limit

Response The response is returned in the form of the command to set that state

Example

```
OPCFG? 3,PEAKLIM
```

Response If the value of the OPCFG PEAKLIM was 15, the response would be:

```
OPCFG 3,PEAKLIM,15
```

Power Control Test Configuration (PCCFG)

The power control test performs power measurement cycles on the EUT output, if the EUT supports power control, at each of the defined frequencies (LOW, MEDIUM and HIGH). This measurement is always performed with hopping off. The MT8850A/MT8852A can perform the test using either loopback test control or TX test control. The default form for this test is to use loopback. The following test is described using the default test control.

The MT8850A/MT8852A transmits a DH1 (or the operator selected packet type) packet with a pseudo random data payload (PRBS 9). This test is performed with hopping off. The LOW, MEDIUM and HIGH frequency sets relate to the default frequencies specified in the Bluetooth RF test specification. The MT8850A/MT8852A allows all the frequencies to be changed.

A power measurement cycle sets the EUT output power to its maximum and then steps the power down to the minimum power and then up to the maximum again one step at a time. For each power step a number of data packets are sent to the EUT and looped back to the MT8850A/MT8852A. When the test is performed in TX test mode only the TX frequency settings are used since both RX and TX frequencies must be the same.

Set command

Command format

```
PCCFG<ws><scriptnumber><,><variable><,>
[<params>.....]
```

<script number> 3 to 10
<variable>

LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the EUT low frequency TX value
MTXFREQ	Set the EUT medium frequency TX value
HTXFREQ	Set the EUT high frequency TX value
LRXFREQ	Set the EUT low frequency RX value
MRXFREQ	Set the EUT medium frequency RX value
HRXFREQ	Set the EUT high frequency RX value
NUMCYC	Number of cycles
PKTTYPE	Packet type to use in performing test
TSTCTRL	Test control to use in test
MXSTEPLIM	Set max power step limit
MNSTEPLIM	Set min power step limit
NUMPKTS	Set the number of packets measured per step
MINPWR	Set the minimum power to which the test will go
PWRDELAY	Set the delay allowed for the EUT to change power levels.

	DEFAULT	Set the test to its default settings (set only)

Example To set the DEFAULT PCCFG the command would be:

```
PCCFG 3,DEFAULT,
```

Request command

Command format `PCCFG?<ws><scriptnumber><,><variable>`

<script number> 1 to 10
<variable>

LFREQSEL	Read the low frequency settings in test
MFREQSEL	Read the medium frequency settings in test
HFREQSEL	Read the high frequency settings in test
LTXFREQ	Read the EUT low frequency TX value
MTXFREQ	Read the EUT medium frequency TX value
HTXFREQ	Read the EUT high frequency TX value
LRXFREQ	Read the EUT low frequency RX value
MRXFREQ	Read the EUT medium frequency RX value
HRXFREQ	Read the EUT high frequency RX value
NUMCYC	Read the current number of cycles
PKTTYPE	Read the packet type to be used in testing
TSTCTRL	Read the test control to used in testing
MXSTEPLIM	Read the max power step limit
MNSTEPLIM	Read the min power step limit

Response The response is returned in the form of the command to set that state

Example

```
PCCFG? 3,NUMCYC
```

Response If the value of the PCCFG NUMCYC was 5, the response would be:

```
PCCFG 3,NUMCYC,5
```

Initial Carrier Test Configuration (ICCFG)

The initial carrier test performs a frequency accuracy test on a DH1 pseudo random data packet. (PRBS 9) This test can be performed using either the loopback test control or the TX test control. The default is to use the loopback test control. This test can be made with either hopping on or off.

With hopping off, the MT8850A/MT8852A measures the initial carrier frequency error at the three frequencies defined on the LOW, MEDIUM and HIGH set up screen. The number of packets measured at each frequency is set by the user in the "Number of packets" field. This is the test method described in the Bluetooth RF Test Specification for an initial carrier frequency test with hopping off.

With hopping on, the MT8850A/MT8852A can make the measurement in one of two ways.

If Hopping On mode is set to "All", the MT8850A/MT8852A will measure the initial carrier frequency at every one of the 79 frequencies in the Bluetooth channel structure. The number of packets measured at each frequency is set by the user in the "Number of packets" field. This is the test method described in the Bluetooth RF Test Specification for an initial carrier frequency test with hopping on.

If Hopping On mode is set to "Any" the MT8850A/MT8852A measures the power at the next frequency that the link hops to after the previous initial carrier frequency measurement has been completed. The total number of packets measured is set by the user in the "Number of packets" field. This is typically the shortest option as there is no requirement to measure a large number of packets at every frequency.

When the measurement is made using TX mode the MT8850A/MT8852A sets up the EUT so that when the EUT is polled it transmits a DH1 packet with a pseudo random payload for each of the frequencies selected (LOW, MEDIUM and HIGH). This test can be performed with hopping off and on. The LOW, MEDIUM and HIGH frequencies relate to the default frequencies specified in the Bluetooth RF test specification. The MT8850A/MT8852A allows all the frequencies to be changed. When the test is performed in TX test mode EUT transmitter and receiver frequencies must be the same.

Set command

Command format

```
ICCFG<ws><scriptnumber><,><variable><,>
[<params>.....]
```

<script number> 3 to 10
<variable>

HOPMODE	Use All or ANY MT8850A custom mode
HOPPING	Hopping stages of the test
LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the low frequency TX and RX value
MTXFREQ	Set the medium frequency TX and RX value
HTXFREQ	Set the high frequency TX and RX value
LRXFREQ	Set the EUT low frequency RX value

MRXFREQ	Set the EUT medium frequency RX value
HRXFREQ	Set the EUT high frequency RX value
NUMPKTS	Set the number of packets used for each
TSTCTRL	Test control to use in test
OFFSETLIM	Set the offset limit
MXPOSLIM	Set the positive offset limit
MXNEGLIM	Set the negative offset limit
DEFAULT	Set the test to its default settings (set only)

Example To set the DEFAULT ICCFG the command would be:

```
ICCFG 3,DEFAULT,
```

Request command

Command format

```
ICCFG?<ws><scriptnumber><,><variable>
```

<script number> 1 to 10
<variable>

HOPMODE	Read the MT8850A/MT8852A custom mode
HOPPING	Read the hopping stages of the test
LFREQSEL	Read the low frequency settings in test
MFREQSEL	Read the medium frequency settings in test
HFREQSEL	Read the high frequency settings in test
LTXFREQ	Read the low frequency TX and RX value
MTXFREQ	Read the medium frequency TX and RX value
HTXFREQ	Read the high frequency TX and RX value
LRXFREQ	Read the EUT low frequency RX value
MRXFREQ	Read the EUT medium frequency RX value
HRXFREQ	Read the EUT high frequency RX value
NUMPKTS	Read the number of packets used
PKTTYPE	Read the packet type used in testing
TSTCTRL	Read the test control used in testing
MXPOSLIM	Read the positive offset limit
MXNEGLIM	Read the negative offset limit

Response The response is returned in the form of the command to set that state

Example

```
ICCFG? 3,PKTTYPE
```

Response If the value of the ICCFG PKTTYPE was DH1, the response would be:

```
ICCFG 3,PKTTYPE,DH1
```

Carrier Drift Test Configuration (CDCFG)

The carrier drift test performs a frequency drift measurement over the length of the packet received. The test can be carried out for each of the supported packet types with either hopping on or hopping off. This test can be performed using either the loopback test control or the TX test control. The default is to use the loopback test control.

In loopback mode with hopping off, the MT8850A/MT8852A sends DH1, DH3 and DH5 packets with a 10101010.payload at each of the frequencies selected (LOW, MEDIUM and HIGH). The EUT returns the DH1, DH3 or DH5 packet for measurement. The LOW, MEDIUM and HIGH frequencies relate to the default frequencies specified in the Bluetooth RF test specification. The number of packets of each length that are measured is set in the "Number of packets" field. The MT8850A/MT8852A allows all the frequencies to be changed. This is the test method described in the Bluetooth RF Test Specification for a carrier frequency drift test with hopping off.

In loopback mode with hopping on, and hopping on mode set to "All" the MT8850A/MT8852A sends DH1, DH3 and DH5 packets with a 10101010.payload. The EUT returns the DH1, DH3 or DH5 packet for measurement. The MT8850A/MT8852A will measure the carrier frequency drift for each packet length at every one of the 79 frequencies in the Bluetooth channel structure. The number of packets of each length that are measured is set in the "Number of packets" field. This is the test method described in the Bluetooth RF Test Specification for a carrier frequency drift test with hopping on.

In loopback mode with hopping on, and hopping on mode set to "Any" the MT8850A/MT8852A sends DH1, DH3 and DH5 packets with a 10101010 payload. The EUT returns the DH1, DH3 or DH5 packet for measurement. The MT8850A/MT8852A will measure the carrier frequency drift at the next frequency that the link hops to after the previous carrier frequency drift measurement has been completed. The number of packets of each length that are measured is set in the "Number of packets" field.

In TX mode with hopping on or off the measurement process is the same as for loopback except that the MT8850A/MT8852A does not send full DHX packets but just POLL packets. The EUT has been configured by the MT8850A/MT8852A to respond to a POLL with the appropriate DHX packet. The EUT must support TX mode part of the Test Mode specification for this to work. The test time is much shorter when run using TX mode compared with loopback as the MT8850A/MT8852A does not have to send full packet lengths. When the test is performed in TX test mode EUT transmitter and receiver frequencies must be the same. For this test the TX and RX frequencies are the same. TX mode complies with the Bluetooth RF Test Specification for a carrier frequency drift test.

Set command

Command format

```
CDCFG<ws><scriptnumber><,><variable><,>
[<params>.....]
```

<script number> 3 to 10
<variable>

HOPMODE	Use standard or custom MT8850A custom mode
HOPPING	Hopping stages of the test
LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test

LTXFREQ	Set the low frequency TX and RX value
MTXFREQ	Set the medium frequency TX and RX value
HTXFREQ	Set the high frequency TX and RX value
LRXFREQ	Set the EUT low frequency RX value
MRXFREQ	Set the EUT medium frequency RX value
HRXFREQ	Set the EUT high frequency RX value
NUMPKTS	Set the number of packets used
PKTSIZE	Set the packet sizes to be used
TSTCTRL	Test control to use in test
DFT1LIM	Set the 1 slot packet drift limit
DFT3LIM	Set the 3 slot packet drift limit
DFT5LIM	Set the 5 slot packet drift limit
DFTNPLIM	Set the drift limit in NULL packets.
DFTRATE	Set the drift rate limit
DEFAULT	Set the test to its default settings (set only)

Example To set the DEFAULT CDCFG the command would be:

```
CDCFG 3,DEFAULT
```

Request command

Command format

```
CDCFG?<ws><scriptnumber><,><variable>
```

<script number> 1 to 10
<variable>

HOPMODE	Read the MT8850A/MT8852A custom mode
HOPPING	Read the hopping stages
LFREQSEL	Read the low frequency settings in test
MFREQSEL	Read the medium frequency settings in test
HFREQSEL	Read the high frequency settings in test
LTXFREQ	Read the low frequency TX and RX value
MTXFREQ	Read the medium frequency TX and RX value
HTXFREQ	Read the high frequency TX and RX value
LRXFREQ	Read the EUT low frequency RX value
MRXFREQ	Read the EUT medium frequency RX value
HRXFREQ	Read the EUT high frequency RX value
NUMPKTS	Read the number of packets used
PKTSIZE	Read the packet sizes to be used

TSTCTRL	Read the test control used in testing
DFT1LIM	Read the 1 slot packet drift limit
DFT3LIM	Read the 3 slot packet drift limit
DFT5LIM	Read the 5 slot packet drift limit
DFTRATE	Read the drift rate limit

Response The response is returned in the form of the command to set that state

Example

```
CDCFG? 3,HOPPING
```

Response If the value of the CDCFG HOPPING was ON, the response would be:

```
CDCFG 3,HOPPING,ON
```

Single Slot Sensitivity Test Configuration (SSCFG)

For a single slot sensitivity measurement the MT8850A/MT8852A transmits DH1 packets with a pseudo random payload (PRBS 9) to the EUT at a minimum power level. If the dirty transmitter parameters are applied, then every 20 mS the MT8850A/MT8852A changes the transmitter parameters as specified in the dirty transmitter table for this test. The EUT loops back the received data and a bit error rate (BER) calculation and frame error rate (FER) calculation is performed by the MT8850A/MT8852A test set. The test is repeated for each of the frequencies selected (LOW, MEDIUM and HIGH). This test is performed with hopping off. The LOW, MEDIUM and HIGH frequencies relate to the default frequencies specified in the Bluetooth RF test specification. The MT8850A/MT8852A allows all the frequencies to be changed. This is the test method described in the Bluetooth RF Test Specification for a single slot sensitivity test with hopping off.

The MT8850A/MT8852A can also carry out this test with hopping on.

Set command

Command format

```
SSCFG<ws><scriptnumber><,><variable><,>
[<params>.....]
```

<script number> 3 to 10
<variable>

LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the low frequency TX value
LRXFREQ	Set the low frequency RX value
MTXFREQ	Set the medium frequency TX value
MRXFREQ	Set the medium frequency RX value
HTXFREQ	Set the high frequency TX value
HRXFREQ	Set the high frequency RX value
HOPPING	Set the Hopping modes used
NUMPKTS	Set the number of packets used for each
TXPWR	Set the requested EUT RX power level
DIRTYTX	Use dirty parameter table ON/OFF
DIRTYTAB	Update the dirty table parameters
DRIFTS	Set the Drift status
BERLIM	Set overall BER limit
FERLIM	Set overall FER limit
PKTCOUNT	Set the method used to count packets
DEFAULT	Set the test to its default settings (set only)

Example To set the SSCFG to on the command would be:

```
SSCFG 3,LFREQSEL,ON
```

Request command

Command format `SSCFG?<ws><scriptnumber><,><variable>`

<script number> 1 to 10
<variable>

LFREQSEL	Read the low frequency settings in test
MFREQSEL	Read the medium frequency settings in test
HFREQSEL	Read the high frequency settings in test
LTXFREQ	Read the low frequency TX value
LRXFREQ	Read the low frequency RX value
MTXFREQ	Read the medium frequency TX value
MRXFREQ	Read the medium frequency RX value
HTXFREQ	Read the high frequency TX value
HRXFREQ	Read the high frequency RX value
HOPPING	Read the Hopping modes used
NUMPKTS	Read the number of packets used
TXPWR	Read the requested EUT RX power level
DIRTYTX	Read the dirty parameter table setting
DIRTYTAB	Read the dirty table parameters
DRIFTS	Read the Drift status
BERLIM	Read the overall BER limit
FERLIM	Read the overall FER limit
PKTCOUNT	Read the method used to count packets

Response The response is returned in the form of the command to set that state

Example

```
SSCFG? 3,LFREQSEL
```

Response If the value of SSCFG was LFREQSEL, the response would be:

```
SSCFG 3,LFREQSEL,ON
```

Multi Slot Sensitivity Test Configuration (MSCFG)

For a multi slot sensitivity measurement the MT8850A/MT8852A transmits the longest supported packet type as reported by the EUT during link set up with a pseudo random payload (PRBS 9) to the EUT at a minimum power level. If the dirty parameters are enabled then every 20 mS the MT8850A/MT8852A changes the transmitter parameters as specified in the dirty transmitter table for this test. The EUT loops back the received data and a bit error rate (BER) calculation and frame error rate (FER) calculation is performed by the MT8850A/MT8852A test set. This test is performed with hopping off. Measurements are made at each of the frequencies selected (LOW, MEDIUM and HIGH). The LOW, MEDIUM and HIGH frequencies relate to the default frequencies specified in the Bluetooth RF test specification. The MT8850A/MT8852A allows all the frequencies to be changed. This is the test method described in the Bluetooth RF Test Specification for a multi slot sensitivity test with hopping off.

The MT8850A/MT8852A can also carry out this test with hopping on.

Set command

Command format `MSCFG<ws><scriptnumber><,><variable><,>[<params>.....]`

<script number> 3 to 10
<variable>

LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the low frequency TX value
LRXFREQ	Set the low frequency RX value
MTXFREQ	Set the medium frequency TX value
MRXFREQ	Set the medium frequency RX value
HTXFREQ	Set the high frequency TX value
HRXFREQ	Set the high frequency RX value
HOPPING	Set the Hopping modes used
NUMPKTS	Set the number of packets used for each
TXPWR	Set the requested EUT RX power level
DIRTYTX	Use dirty parameter table ON/OFF
DIRTYTAB	Update the dirty table parameters
DRIFTS	Set the Drift status
PKTTYPE	Packet type to use in performing test
BERLIM	Set overall BER limit
FERLIM	Set overall FER limit
PKTCOUNT	Set the method used to count packets

DEFAULT	Set the test to its default settings (set only)

Example To set the DEFAULT MSCFG the command would be:

```
MSCFG 3,DEFAULT
```

Request command

Command format `MSCFG?<ws><scriptnumber><,><variable>`

<script number> 1 to 10
<variable>

LFREQSEL	Read the low frequency settings in test
MFREQSEL	Read the medium frequency settings in test
HFREQSEL	Read the high frequency settings in test
LTXFREQ	Read the low frequency TX value
LRXFREQ	Read the low frequency RX value
MTXFREQ	Read the medium frequency TX value
MRXFREQ	Read the medium frequency RX value
HTXFREQ	Read the high frequency TX value
HRXFREQ	Read the high frequency RX value
HOPPING	Read the hopping modes used
NUMPKTS	Read the number of packets used
TXPWR	Read the requested EUT RX power level
DIRTYTX	Read the dirty parameter table setting
DIRTYTAB	Read the dirty table parameters
DRIFTS	Read the Drift status
PKTTYPE	Read the packet type used in testing
BERLIM	Read the overall BER limit
FERLIM	Read the overall FER limit
PKTCOUNT	Read the method used to count packets

Response The response is returned in the form of the command to set that state

Example

```
MSCFG? 3,DRIFTS
```

Response If the value of the MSCFG DRIFTS was ON, the response would be:

```
MSCFG 3,DRIFTS,ON
```

Modulation Index Test Configuration (MICFG)

This test measures the modulation characteristics on the EUT output for each of the frequency ranges selected (LOW, MEDIUM and HIGH). The MT8850A/MT8852A can perform the test using either loopback test controls or TX test controls. The default form for this test is to use loopback. The following test is described using the default test control.

The MT8850A/MT8852A transmits a number of packets containing the four ones four zeros payload (11110000) which are looped back by the EUT. Then packets with the alternate ones and zeros (101010101) payload are transmitted and are looped back by the EUT. These packets are the longest supported packet type as reported by the EUT during link set up (DH1, DH3 or DH5) or the selected packet type.

This test is performed with hopping off, and the test is repeated until the number of packets has been measured on each of the selected frequencies as set in the "Number of packets" field. The LOW, MEDIUM and HIGH frequencies relate to the default frequencies specified in the Bluetooth RF test specification. The MT8850A/MT8852A allows all the frequencies to be changed. When the test is performed in TX test mode EUT transmitter and receiver frequencies must be the same.

Set command

Command format

```
MICFG<ws><scriptnumber><,><variable><,>
[<params>.....]
```

<script number> 3 to 10
<variable>

LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the low frequency TX value
LRXFREQ	Set the low frequency RX value
MTXFREQ	Set the medium frequency TX value
MRXFREQ	Set the medium frequency RX value
HTXFREQ	Set the high frequency TX value
HRXFREQ	Set the high frequency RX value
NUMPKTS	Set the number of packets used for each
PKTTYPE	Packet type to use in performing test
TSTCTRL	Test control to use in test
F1AVGMIN	Set the f1avg min limit
F1AVGMAX	Set the f1avg max limit
F2MAXLIM	Set the f2max limit
F1F2MAX	Set the f1/f2 avg max limit
TOGGLE	Set the payload type.

DEFAULT	Set the test to its default settings (set only)

Example To set the DEFAULT MICFG the command would be:

```
MICFG 3,DEFAULT
```

Request command

Command format `MICFG?<ws><scriptnumber><,><variable>`

<script number> 1 to 10
<variable>

LFREQSEL	Read the low frequency settings in test
MFREQSEL	Read the medium frequency settings in test
HFREQSEL	Read the high frequency settings in test
LTXFREQ	Read the low frequency TX value
LRXFREQ	Read the low frequency RX value
MTXFREQ	Read the medium frequency TX value
MRXFREQ	Read the medium frequency RX value
HTXFREQ	Read the high frequency TX value
HRXFREQ	Read the high frequency RX value
NUMPKTS	Read the number of packets used
PKTTYPE	Read the packet type used in testing
TSTCTRL	Read the test control used in testing
F1AVGMIN	Read the f1avg min limit
F1AVGMAX	Read the f1avg max limit
F2MAXLIM	Read the f2max limit
F1F2MAX	Read the f1/f2 avg max limit
TOGGLE	Read the payload type

Response The response is returned in the form of the command to set that state

Example

```
MICFG? 3,NUMPKTS
```

Response If the value of the MICFG NUMPKTS was 10, the response would be:

```
MICFG 3,NUMPKTS,10
```

Input Power Sensitivity Test Configuration (MPCFG)

For the EUT maximum input power test the MT8850A/MT8852A transmits a pseudo random payload (PRBS 9) DH1 data packet to the EUT so that the EUT receives the signal at a power level of -20 dBm. The EUT loops back the received data and a bit error rate (BER) calculation and frame error rate (FER) calculation is performed by the MT8850A/MT8852A test set. The test is repeated for each of the frequency ranges selected (LOW, MEDIUM and HIGH). This test is performed with hopping off. The LOW, MEDIUM and HIGH frequencies relate to the default frequencies specified in the Bluetooth RF test specification. The MT8850A/MT8852A allows all the frequencies to be changed.

Set command

Command format

```
MPCFG<ws><scriptnumber><,><variable><,>
[<params>.....]
```

<script number> 3 to 10
<variable>

LFREQSEL	Use the low frequency settings in test
MFREQSEL	Use the medium frequency settings in test
HFREQSEL	Use the high frequency settings in test
LTXFREQ	Set the low frequency TX value
LRXFREQ	Set the low frequency RX value
MTXFREQ	Set the medium frequency TX value
MRXFREQ	Set the medium frequency RX value
HTXFREQ	Set the high frequency TX value
HRXFREQ	Set the high frequency RX value
NUMPKTS	Set the number of packets used for each
TXPWR	Set the requested DUT RX power level
BERLIM	Set BER limit
FERLIM	Set FER limit
PKTCOUNT	Set the method used to count packets
DEFAULT	Set the test to its default settings (set only)

Example To set the DEFAULT MPCFG the command would be:

```
MSCFG 3,DEFAULT
```

Request command

Command format

```
MPCFG?<ws><scriptnumber><,><variable>
```

<script number> 1 to 10
<variable>

LFREQSEL	Read the low frequency settings in test
MFREQSEL	Read the medium frequency settings in test

HFREQSEL	Read the high frequency settings in test
LTXFREQ	Read the low frequency TX value
LRXFREQ	Read the low frequency RX value
MTXFREQ	Read the medium frequency TX value
MRXFREQ	Read the medium frequency RX value
HTXFREQ	Read the high frequency TX value
HRXFREQ	Read the high frequency RX value
NUMPKTS	Read the number of packets used
TXPWR	Read the requested DUT RX power level
BERLIM	Read the BER limit
FERLIM	Read the FER limit
PKTCOUNT	Read the method used to count packets

Response The response is returned in the form of the command to set that state

Example

```
MPCFG 3,NUMPKTS
```

Response If the value of the MPCFG NUMPKTS was 10, the response would be:

```
MPCFG 3,NUMPKTS,10
```

Configuring Tests in Single Payload Mode (SPCFG)

This command allows the setting of the configuration under which tests are carried out when script mode is set to Single Payload. Note that the measurements made in each test are dependant upon the configuration set by this command and that the Maximum Input Power Sensitivity Test is NOT supported in Single Payload mode.

Set command

SPCFG<ws><script number><,><variable><,>[<params>.....]

Request command

Command format SPCFG?<ws><script number><,><variable>

<script number> :1 to 10

TSTCTRL	Test control to use in test
PAYLOAD	Set the test control payload type
PKTTYPE	Packet type to use in performing test
HOPSTATE	Set the hopping modes used
TXFREQ	Set the TX frequency value
RXFREQ	Set the RX frequency value
DIRTYTX	Use dirty parameter table ON/OFF
DEFAULT	Restore the default settings (set only)

Test Limit Variables

The limit variables for each of the tests are detailed in this section.

Output Power limit commands (AVGMXLIM, AVGMNLIM)

These parameters are used to set or read the limits used to determine if the average power reading in the output power test passes or fails.

Set command

Command format

```
OPCFG<ws><script number><,><parameter><,><limit value>[DBM]
```

<script number>	3 to 10
<parameter>	AVGMXLIM AVGMNLIM
<limit value>	-80 dBm to +30 dBm (Default +20 dBm)

Example To set the average limit in script 3 output power test to 18 dBm the command would be:

```
OPCFG 3,AVGMNLIM,18
```

Request command

Command format

```
OPCFG?<ws><script number><,><parameter>
```

<script number>	1 to 10
<parameter>	AVGMXLIM AVGMNLIM

Response The response will be returned in the form of the command to set that state.

Example

```
OPCFG? 7,AVGMXLIM
```

Response If the average high limit in script 7 output power test was 22 the response would be:

```
OPCFG 7,AVGMXLIM,22
```

Power Control Limit Commands (MXSTEPLIM, MNSTEPLIM)

These parameters are used in the power control test configuration to set or read the power step limits. If the step sizes are not within these limits the test is reported as failed.

Set command

Command format `PCCFG<ws><script number><,><selection><,><value>`

<script number> 3 to 10
<selection>

MXSTEPLIM	Maximum power step
MNSTEPLIM	Minimum power step
<value>	1.0 to 10.0 dBm
step size	0.1 dBm

Example To set the max step limit to 3 dBm in script 4 power control test the command would be:

```
PCCFG 4,MXSTEPLIM,3
```

Request command

Command format `PCCFG<ws><script number><,><selection>`

<script number> 1 to 10
<selection>

MXSTEPLIM	Maximum power step
MNSTEPLIM	Minimum power step

Response The response will be returned in the form of the command to set that state.

Example

```
PCCFG 4,MXSTEPLIM
```

Response If the max step limit in script 4 power control test is 3 dB the response would be:

```
PCCFG 4,MXSTEPLIM,3
```

Initial Carrier Limit Commands (MXPOSLIM, MXNEGLIM)

These parameters are used to set or read the maximum positive or negative offset limits for the initial carrier test.

Set command

Command format

```
ICCFG<ws><script number><,>MXPOSLIM<,><limit value>[kHz]
```

<script number> 3 to 10
<limit value> Range -200 to +200 kHz (Default 75 kHz)

Example To set the maximum positive offset limit to 11 kHz in script 3 the command would be:

```
ICCFG 3,MXPOSLIM,11 kHz
```

Request command

Command format

```
ICCFG?<ws><script number><,>MXNEGLIM
```

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
ICCFG 7,MXNEGLIM
```

Response If the maximum negative offset limit in script 7 is -75 kHz the response would be:

```
ICCFG 7,MXNEGLIM,-7.5E4
```

Carrier Drift Limit Commands (DFT1LIM, DFT3LIM, DFT5LIM, DFTNPLIM, DFTRATE)

This parameter is used to set or read the drift limit values in the carrier drift test. The drift rate if in the units of Hz/50uS.

Set command

Command format `CDCFG<ws><script number><,><variable><,><number>`

<script number> 3 to 10
<variable>

DFT1LIM Set the 1 slot packet drift limit (range 0.0 to 200 kHz)

DFT3LIM Set the 3 slot packet drift limit (range 0.0 to 200 kHz)

DFT5LIM Set the 5 slot packet drift limit (range 0.0 to 200 kHz)

DFTNPLIM Set the null packet drift limit (range 0.0 to 40.0 kHz, default is 25 kHz

DFTRATE Set drift rate limit (range 1000 to 90000, default 20000 Hz/50 uS)

<number> Ranges depend on the parameter.

Example To set the drift limit for 5 slot packets to +/- 70 kHz in script 4 carrier drift test the command would be:

```
CDCFG 4,DFT5LIM,70 kHz
```

Request command

Command format `CDCFG?<ws><script number><,><variable>`

<script number> 1 to 10
<variable>

DFT1LIM Request the 1 slot packet drift limit

DFT3LIM Request the 3 slot packet drift limit

DFT5LIM Request the 5 slot packet drift limit

DFTNPLIM Request the null packet drift limit.

Response The response will be returned in the form of the command to set that state.

Example

```
CDCFG? 7,DFT3LIM
```

Response If script 7 drift limit for 3 slot packets is 55 kHz carrier drift test, the response would be:

```
CDCFG 7,DFT3LIM,55E3
```

Sensitivity Related Limit Commands (BERLIM, FERLIM)

These parameters are used to set or read the BER/FER limit value used in the sensitivity tests.

Set command

Command format `SSCFG<ws><script number><,>,parameter><,><number>`

<script number>	3 to 10
<parameter>	BERLIM FERLIM
<number>	Ranges depend on the parameter (unit %) 0.001 to 100 - FER 0.001 to 10 - BER

Example Set the BER limit for script 4 single slot sensitivity test to 0.4% the command would be:

`SSCFG` 4,BERLIM,0.4

Request command

Command format `SSCFG?<ws><script number><,><parameter>`

<script number>	1 to 10
<parameter>	BERLIM FERLIM

Response The response will be returned in the form of the command to set that state.

Example `SSCFG? 7,BERLIM`

Response If script 7 single slot sensitivity test BER limit is set to 0.2%, the response would be:

`SSCFG 7,BERLIM,0.2`

Modulation Index Limit Commands (F1AVGMIN, F1AVGMAX, F2MAXLIM, F1F2MAX)

These parameters are used to set or read the limit values used in the modulation characteristic test to determine if the test has passed or failed.

Set command

Command format `MICFG<ws><script number><,><variable><,><number>`

<script number> <variable>	3 to 10
F1AVGMIN	Set the f1avg min limit
F1AVGMAX	Set the f1avg max limit
F2MAXLIM	Set the f2max limit
F1F2MAX	Set the f1/f2 avg max limit
<number>	Ranges depend on the parameter :
F1AVGMIN	Range -200 to +200
F1AVGMAX	Range -200 to +200
F2MAXLIM	Range -200 to +200
F1F2MAX	Range 0.0 t0 1.0

Example Set the f1avg min value to 140 kHz in script 4 modulation index test the command would be:

```
MICFG 4,F1AVGMIN,140 kHz
```

Request command

Command format `MICFG?<ws><script number><,><variable>`

<script number> <variable>	1 to 10
F1AVGMIN	Set the f1avg min limit
F1AVGMAX	Set the f1avg max limit
F2MAXLIM	Set the f2max limit
F1F2MAX	Set the f1/f2 avg max limit

Response The response will be returned in the form of the command to set that state.

Example

```
MICFG? 7,F1AVGMAX
```

Response If script 7 modulation index test f1avg max limit is 200 kHz, the response would be:

```
MICFG 7,F1AVGMAX,200E3
```

Parameter Variables

This section provides details of the non-limit type variables that may be used for all or any of the tests. For ease of referencing, the variables are listed in alphabetical order.

Actual Frequencies Used (LTXFREQ, LRXFREQ, MTXFREQ, MRXFREQ, HTXFREQ, HRXFREQ, TXFREQ, RXFREQ)

These parameters are used to set or read the actual frequencies used for each of the Low, Medium or High frequencies. When a test is in TX test control mode only the TXFREQ values are used for both transmit and receive frequencies.

> The TX frequencies are the EUT TX frequencies and the RX frequencies are the EUT RX frequencies.

Set command

Command format

```
PCCFG<ws><script number><,><freq_select><,><form>
<,><frequency>[suffix]
```

<script number> 3 to 10

<freq_select>

LTXFREQ	Low TX frequency setting
LRXFREQ	Low RX frequency setting
MTXFREQ	Medium TX frequency setting
MRXFREQ	Medium RX frequency setting
HTXFREQ	High TX frequency setting
HRXFREQ	High RX frequency setting
TXFREQ	TX frequency setting used in single payload test
RXFREQ	RX frequency setting used in single payload test

<form>

FREQ	The <frequency> data is in the frequency form. i.e. 2400 MHz to 2483 MHz.
CHAN	The <frequency> data is in the channel number form. i.e. 0 to 78.

<frequency> Frequency value in Hz.

Example 1 To set low TX frequency to 2434 MHz in script 4 power control test using frequency form the command would be:

```
PCCFG 4,LTXFREQ,FREQ,2434 MHz
```

Example 2 To set low TX frequency to 2434 MHz in script 4 power control test using channel form the command would be:

```
PCCFG 4,LTXFREQ,CHAN,32
```

Request command

Command format `PCCFG?<ws><script number><,><freq_select><,><form>`

<script number> 1 to 10
<freq_select>

LTXFREQ	Low TX frequency setting
LRXFREQ	Low RX frequency setting
MTXFREQ	Medium TX frequency setting
MRXFREQ	Medium RX frequency setting
HTXFREQ	High TX frequency setting
HRXFREQ	High RX frequency setting

<form>

FREQ	The <frequency> data is in the frequency form. i.e. 2402 MHz to 2480 MHz.
CHAN	The <frequency> data is in the channel number form. i.e. 0 to 78.

Response The response will be returned in the form of the command to set that state.

Example `PCCFG? 7,MRXFREQ,FREQ`

Response If the power control medium RX frequency in script 7 is 2480 MHz, the response would be:

`PCCFG 7,MRXFREQ,FREQ,2480E+006`

DEFAULT

This parameter applies to all tests and will set that test back to its default settings.

Set command

Command format `PCCFG<ws><script number><,>DEFAULT`

<script number> 3 to 10 for set

Example To set the power control test in script 3 to defaults the command would be:

```
PCCFG 3,DEFAULT
```

DIRTYTAB

This parameter is used with the multi-slot sensitivity and single slot sensitivity tests where the dirty parameter table is available. The command allows a single entry or all entries for a parameter to be changed or read within a table.

Set command

Command format `SSCFG<ws><script number><,>DIRTYTAB<,><variable><,><entry><,><number>`

<script number> 3 to 10
<variable>

OFFSET	Set the frequency offset
SYMT	Set symbol timing value
MODINDEX	Set the mod index value
entry>	1 to 10 "0" to set all ten entries. In this case the <number> consists of ten comma separated entries for the table.
<number>	Ranges depend on the parameter
Offset	-75 kHz to +75 kHz
Symbol timing	-20 ppm to +20 ppm
Mod index	0.25 to 0.38

Example 1 To set the single slot dirty table offset entry 4 value to -10 kHz in script 4 single slot sensitivity test the command would be:

```
SSCFG 4,DIRTYTAB,OFFSET,4,-10 kHz
```

Example 2 To set all the table entries at once of OFFSET the command would be:

```
SSCFG 4,DIRTYTAB,OFFSET,0,-75 KHz,0 KHz,15 KHz,3
kHz, -20 kHz-10E3,13E3,-4.6E4,1 KHz,0
```

Request command

Command format

```
SSCFG?<ws><script number><,><DIRTYTAB><,>
<variable><,><entry>
```

<script number> 1 to 10
<variable>

OFFSET	Set the frequency offset
SYMT	Set symbol timing value
MODINDEX	Set the mod index value
<entry>	0 read all 10 values for this parameter 1 to 10

Response The response will be returned in the form of the command to set that state.

Example For script 7 single slot sensitivity test dirty table entry the command to read would be:

```
SSCFG? 7,DIRTYTAB,MODINDEX,3
```

Response If the mod index is 0.28, the response would be:

```
SSCFG 7,DIRTYTAB,MODINDEX,3,0.28
```

DIRTYTX

This parameter is used to set or read whether the dirty transmitter is applied during the single slot and multi slot sensitivity tests, and single payload test when a payload of PRBS9 is used.

Set command

Command format

```
SSCFG<ws><script number><,>DIRTYTX<,><status>
```

<script number> 3 to 10
<status> ON or OFF

Example To apply the dirty parameters to the multi slot sensitivity test in script 3 the command would be:

```
MSCFG 3,DIRTYTX,ON
```

Request command

Command format

```
MSCFG?<ws><script number><,>DIRTYTX
```

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
MSCFG? 7,DIRTYTX
```

Response If the dirty TX is not applied to the multi sensitivity test in script 7 the response would be:

```
MSCFG 7,DIRTYTX,OFF
```

Frequencies Used (LFREQSEL, MFREQSEL, HFREQSEL)

These parameters are used to select or read whether the low, medium or high frequencies are used when the test is run. LFREQSEL

Set command

Command format `PCCFG<ws><script number><,><selection><,><status>`

<script number>	3 to 10 for set
<selection>	LFREQSEL MFREQSEL HFREQSEL
<status>	ON or OFF

Example To set low frequency select in power control test of script 4 to ON the command would be:

```
PCCFG 4,LFREQSEL,ON
```

Request command

Command format `PCCFG?<ws><script number><,><selection>`

<script number>	3 to 10 for set
<selection>	LFREQSEL MFREQSEL HFREQSEL

Response The response will be returned in the form of the command to set that state.

Example

```
PCCFG? 7,MFREQSEL
```

Response If the medium frequency select of script 7 was OFF the response would be:

```
PCCFG 7,MFREQSEL,OFF
```

DRIFTS

This application turns on or off the application of drift as specified in the RF Bluetooth test specification.

Set command

Command format `SSCFG<ws><script number><,><DRIFTS><status>`

<script number> 3 to 10
<status> ON or OFF

Example To set drift to ON in script 3 single sensitivity test, the command would be:

```
SSCFG 3,DRIFTS,ON
```

Request command

Command format `SSCFG?<ws><script number><,><DRIFTS>`

<script number> 1 to 10 for set

Response The response will be returned in the form of the command to set that state.

Example

```
SSCFG 3, DRIFTS, ON
```

HOPMODE

When a test is run with hopping on, this parameter is used to set which packets in the hop sequence are used for measurement. It is used with OPCFG, ICCFG and CDCFG.

Set command

Command format `ICCFG<ws><script number><,>HOPMODE<,><mode>`

<script number> 3 to 10
<mode> Defined
ALL
ANY

Example To set hopping mode in script 4 initial carrier test to custom the command would be:

```
ICCFG 4,HOPMODE,ALL
```

Request command

Command format `ICCFG?<ws><script number><,>HOPMODE`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
ICCFG? 7,HOPMODE
```

Response If script 7 initial carrier test hopping mode is ANY, the response would be:

```
ICCFG 7,HOPMODE,ANY
```

HOPPING

Some of the tests can be done in both hopping ON and hopping OFF states. This parameter is used to set or read in which states the test will be done when a test with this parameter is run.

Set command

Command format `ICCFG<ws><script number><,>HOPPING<,><variable>`

<script number> 3 to 10
<variable>

HOPON	Test performed with hopping ON
HOPOFF	Test performed with hopping OFF
HOPBOTH	Test performed with both ON and OFF

Example To set hopping on mode in script 4 initial carrier test to ON the command would be:

```
ICCFG 4,HOPPING,HOPON
```

Request command

Command format `ICCFG?<ws><script number><,>HOPPING`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example `ICCFG? 7,HOPPING`

Response If script 7 initial carrier test hopping off is OFF, the response would be:

```
ICCFG 7,HOPPING,HOPOFF
```

HOPSTATE

The single payload test can be performed in both hopping on and hopping off states. This parameter is used to set or read in which state the single payload test will be performed.

Set command

Command format `SPCFG<ws><script number><,>HOPSTATE<,><variable>`

<script number> 3 to 10
<variable>

ON	Test performed with hopping ON
OFF	Test performed with hopping OFF

Example To set the single payload hopping state to on for script 4:

```
SPCFG 4,HOPSTATE,ON
```

Request command

Command format `SPCFG?<ws><script number><,>HOPSTATE`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
SPCFG? 4,HOPSTATE
```

Response If script 4 single payload test hop state is on, the response would be:

```
SPCFG 4,HOPSTATE,ON
```

MINPWR

This parameter is used to set or read the required minimum EUT TX power level the power control test will step to if the EUT has not already reached it's minimum.

Set command

Command format PCCFG<ws><script number><,><MINPWR<,><value>[DBM]

<script number> 1 to 10
<value> -40dBm to 0dBm

Example To set the power level to -30dBm in script 4 the command would be:

-40dBm to 0dBm

Request command

Command format PCCFG?<ws><script number><,>MINPWR

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example If script 7 power control test min power level is set to -35 dBm, the response would be:

PCCFG 7,MINPWR,-35

NUMCYC

This parameter is used to set or read the number of cycles used in the power control test. Each cycle of the test is as follows. The EUT is set to its maximum power level and then is stepped down to its minimum power level. Then the EUT is stepped up to the maximum power.

Set command

Command format

```
PCCFG<ws><script number><,>NUMCYC<,><number>
```

<script number> 3 to 10
<number> Integer value,. 1 to 10000 (Default 1)

Example To set the number of cycles to 11 in script 4 power control test the command would be:

```
PCCFG 4,NUMCYC,11
```

Request command

Command format

```
PCCFG?<ws><script number><,>NUMCYC
```

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
PCCFG? 7,NUMCYC
```

Response If script 7 power control number of cycles is 2, the response would be:

```
PCCFG 7,NUMCYC,2
```

NUMPKTS

This parameter is used to set or read the number of packets that are used for each part of the test. For each of the LOW, MEDIUM and HIGH frequencies selected to be used as part of the test, this is the number of packets measured. For hopping tests this value will be used depending on the test and the hopping mode. For the power control test, this is the number of packets measured per step.

Set command

Command format `OPCFG<ws><script number><,>NUMPKTS<,><number>`

<script number> 3 to 10
<number> Integer value,. 1 to 10000 (Default will depend on the test)

Example To set the number of packets to 11 in script 4 output power test the command would be:

```
OPCFG 4,NUMPKTS,11
```

Request command

Command format `OPCFG?<ws><script number><,>NUMPKTS`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
OPCFG? 7,NUMPKTS
```

Response If script 7 output power number of packets is 2, the response would be:

```
OPCFG 7,NUMPKTS,11
```

PAYLOAD

This sets the payload data for the packet type defined.

Set command

Command format

```
SPCFG<ws><script number><,>PAYLOAD<,><payload type>
```

<script number> 1 to 10
<payload type> DATA 10101010
DATA 11110000
DATA PRBS9 (default)

Example To set the payload to PRBS9 for script 4:

```
SPCFG 4,PAYLOAD,DATAPRBS9
```

Request command

Command format

```
SPCFG?<ws><script number><,>PAYLOAD
```

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
SPCFG? 4,PAYLOAD
```

Response If script 4 single payload test payload type was PRBS9, the response would be:

```
SPCFG 4,PAYLOAD,DATAPRBS9
```

PEAKLIM

This parameter is used to set or read the limit used to determine if the peak power reading in the output power test passes or fails.

Set command

Command format

```
OPCFG<ws><script number><,>PEAKLIM<,><limit value>[DBM]
```

<script number> 3 to 10
<limit value> -80.0 dBm to +30.0 dBm (Default +23 dBm)
Step size 0.1 dBm

Example To set the peak limit in script 3 output power test to 18 dBm the command would be:

```
OPCFG 3,PEAKLIM,18
```

Request command

Command format

```
OPCFG?<ws><script number><,>PEAKLIM
```

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
OPCFG? 7,PEAKLIM
```

Response If the peak limit in script 7 output power test is 22 the response would be:

```
OPCFG 7,PEAKLIM,22
```

PKTCOUNT

This parameter is used to configure how the packets are counted during this test. If the packet count is set to transmitted packets the test may not be performed on 1.6 million or greater due to lost packets. If the packet count is set to packets received then the test would be carried out on the 1.6 million or greater bits, but could take longer to complete.

Set command

Command format SSCFG<ws><script number><,>PKTCOUNT<,><param>

<script number> 1 to 10
<param> : TX (for Transmitted). Default

RX (for Received)

Example To set to received in script 5, the command would be:

SSCFG 5,PKTCOUNT,RX

Request command

Command format SSCFG? 5,PKTCOUNT

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

PKTSIZE

This parameter is used to set or read the packet sizes used for the carrier drift test. The test can be performed with all or any combination of the DH1, DH3 or DH5 packets depending on which packet types the EUT support.

> If the EUT does not support the requested packet size the test will FAIL reporting an execution error.

Set command

Command format `CDCFG<ws><script number><,>PKTSIZE<,><variable><,><status>`

<script number> 3 to 10
<variable>

ONESLOT	Test performed with 1 slot packet DH1
THREESLOT	Test performed with 3 slot packet DH3
FIVESLOT	Test performed with 5 slot packet DH5

<status> TRUE or FALSE

Example To set to use 3 slot packets in carrier drift test script 4 to true the command would be:

```
CDCFG 4,PKTSIZE,THREESLOT,TRUE
```

Request command

Command format `CDCFG?<ws><script number><,><PKTSIZE><,><variable>`

<script number> 1 to 10
<variable>

ONESLOT	Test performed with 1 slot packet DH1
THREESLOT	Test performed with 3 slot packet DH3
FIVESLOT	Test performed with 5 slot packet DH5

Response The response will be returned in the form of the command to set that state.

Example

```
CDCFG? 7,PKTSIZE,FIVESLOT
```

Response If script 7 carrier drift test five slot packet is false, the response would be:

```
CDCFG 7,PKTSIZE,FIVESLOT,FALSE
```

PKTTYPE

This parameter is used to set or read the packet type used for a test. The valid parameters depended on the test and whether an EUT supports that packet type i.e.:

Output power:	Longest supported (default), DH5, DH3 or DH1
Power control:	DH1 (default), DH3 or DH5
Modulation characteristics:	Longest supported (default), DH5, DH3 or DH1
Initial carrier:	N/A
Carrier drift:	Inherently selectable in test
Single slot sensitivity:	N/A
Multi slot sensitivity:	Longest supported (default), DH5 or DH3
Maximum input power sensitivity:	N/A
Single payload:	DH5, DH3, or DH1 (default)

Set command

Command format Command format `OPCFG<ws><script number><,>PKTTYPE<,><type>`

<script number>	3 to 10
<type>	LONG DH5 DH3 DH1

Example To set the packet type for the output power test to always use DH3s in script 4 the command would be:

```
OPCFG 4,PKTTYPE,DH3
```

Request command

Command format

```
PCCFG?<ws><script number><,>PKTTYPE
```

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example

```
PCCFG? 7,PKTTYPE
```

Response If script 7 power control test packet type was DH1, the response would be:

```
PCCFG 7,PKTTYPE,DH1
```

PWRDELAY

This parameter is used to set or read the delay required for the EUT to change the TX power as requested before measurements are made. Bluetooth devices if they support power control should have this time in the IXIT document.

Set command

Command format PCCFG<ws><script number><,><PWRDELAY<,><value>

<script number> 1 to 10
<value> 100 Milliseconds to 100 seconds in seconds (1 sec default)

Example To set the delay to 1 second in script 4, the command would be:

PCCFG 4,PWRDELAY,1

Request command

Command format PCCFG?<ws><script number><,>PWRDELAY

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example PCCFG? 7,PWRDELAY

Response If script 7 delay is set to 5 seconds, the response would be:

PCCFG 7,PWRDELAY,5.0e+000

Change Mod Index Test Payload Toggle Operation (TOGGLE)

The modulation index test as defined in the RF test spec requires a measurement made on two different payloads per measurement. This increases the time the test takes to complete. To shorten the time taken to perform this test, the MT8850A/MT8852A can change the payload after the requested number of packets have been measured with the first payload, and then measure the requested number of packets with the second payload.

Set command

Command format `MICFG <scriptnumber>,TOGGLE<ws><mode>`

`<script number>`	3 to 10
`<mode>`	ONCE : Changes the payload only once per measurement stage. CONT : Changes the payload per measurement (Default as RF test spec)

Example To set script 7 for Mod Index test to change the payload type ONCE would be: `MICFG 7, TOGGLE, ONCE`

Request command

Command format `MICFG? <scriptnumber>,TOGGLE`

`<script number>`	3 to 10

Response `MICFG <scriptnumber>, TOGGLE, <ONCE | CONT>`

Example `MICFG 3, TOGGLE, CONT`

TSTCTRL

This parameter is used to set or read the test control used for the test. All tests except the sensitivity tests can be performed using either the loop back or TX test mode test control. The default for each test is indicated below.

Output power (OPCFG):	Loop back test control
Power control (PCCFG):	Loop back test control
Modulation characteristics (MICFG):	Loop back test control
Single payload (SPCFG):	Loop back test control
Initial carrier (ICCFG):	Loop back test control
Carrier drift (CDCFG):	Loop back test control

Set command

Command format `OPCFG<ws><script number><,>TSTCTRL<,><type>`

<script number> 3 to 10
<type> LOOPBACK
TXTEST

Example To set the test control type to be used for the power control type to TX test for script 4 the command would be:

```
PCCFG 4,TSTCTRL,TXTEST
```

Request command

Command format `PCCFG?<ws><script number><,>TSTCTRL`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example `PCCFG? 7,TSTCTRL`

Response If script 7 power control test control was LOOPBACK, the response would be:

```
PCCFG 7,TSTCTRL,LOOPBACK
```

TXPWR

This parameter is used to set or read the required TX power level during the sensitivity tests. The actual power level the MT8850A/MT8852A transmits at will take into account the EUT characterisation table and the fixed offset value, if enabled, so that the EUT will receive at the entered power level.

Set command

Command format `SSCFG<ws><script number><,><TXPWR<,><value>[DBM]`

<script number> 3 to 10
<value> range 0.0 to -90 dBm

Example To set power level to -3 dBm in script 4 single slot sensitivity test the command would be:

```
SSCFG 4,TXPWR,-20
```

Request command

Command format `SSCFG?<ws><script number><,>TXPWR`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example `SSCFG? 7,TXPWR`

Response If script 7 single slot sensitivity test has the power level set to 6 dBm, the response would be:

```
SSCFG 7,TXPWR,6
```

Chapter 11. Running and Aborting Tests

Running Tests (RUN)

This command runs either the test or the script depending on the operation mode. Refer to the operation mode command (OPMD) for details.

Command format `RUN`

It should be noted that when the EUT mode is set to Inquiry, the number of responses must be 1 or the GPIB RUN command will be rejected with an execution error.

Aborting Tests (ABORT)

This command will abort the test or script being run. The test or script will stop immediately and will not wait for the end of the test or script. The result available remains valid.

Command format `ABORT`

Chapter 12. Reading Test Results Data

This command requests results of the test/script last run. If results are requested while a script or test is running an execution error will be indicated. Results screens comprise of an initial "summary" results screen and subsequent " extended" screens. Both summary and extended data is presented for each of the tests in this chapter. The test results are invalidated on power ON, at the start of the test, or on the receipt of the *RST command. It should be noted that the PASS/FAIL indicator only applies to the measurements made. To test for a premature ending of a test or script, the DDE bit in the ESR register should be checked.

Summary Results Screens

Command format

ORESULT<ws>SCRIPT<,><extend code>

or

ORESULT<ws>TEST<,><extend code><,><test>

<extend code>	0 to N (N is test dependant). If a test does not support that extended code the next valid lower code is used. (0 = standard)

<test>

OP	Output power
PC	Power control
MI	Modulation index
IC	Initial carrier
CD	Carrier drift
SS	Single slot sensitivity
MS	Multi slot sensitivity
MP	Maximum input power

Example

To request the whole script results with standard non extended code,0 , the command would be:

```
ORESULT SCRIPT,0
```

To request the standard results of an Output Power test, the command would be:

```
ORESULT TEST,0,OP
```

Output format

The output format of each test follows the test result format. When the results from a complete script are given, the results for each are in the test format, and are separated by commas.

Summary Results Output Format

Command format: `<HEADER><Ext-code>, <data>`

Header	2 ASCII characters indicating which test the results are for.
	OP Output power test results
	PC Power control test results
	MI Modulation characteristics test results
	IC Initial carrier test results
	CD Carrier drift test results
	SS Single slot sensitivity test results
	MS Multi-slot sensitivity test results
	MP Max input power sensitivity test results
Extended code	Single byte indicating the extended information code. The extended code is test related.
0	Standard results
Data	The data is in ASCII and is test dependent.

All data elements are comma delimited for clarity.

Extended Results Data Output

Command format XRESULT<ws><test><,><stage>

<extend code>	0 to N (N is test dependant). If a test does not support that extended code the next valid lower code is used. (0 = standard)
<test>	
OP	Output power
PC	Power control
IC	Initial carrier
CD	Carrier drift
MI	Modulation index
SS	Single slot sensitivity
MS	Multi slot sensitivity
MI	Maximum input power
<stage>	
HOPONL	Hop on defined low frequency
HOPONM	Hop on defined medium frequency
HOPONH	Hop on defined high frequency
HOPONALL	Hop on all channels
HOPONANY	Hop on any channels
HOPOFFL	Hop off low frequency
HOPOFFM	Hop off medium frequency
HOPOFFH	Hop off high frequency

Example To request the Output Power Hopping ON Low Channel results, the command would be:

```
XRESULT OP, HOPONL
```

Extended Results Output Format

Command format: `<HEADER><Ext-code>, <data>`

Header	3 ASCII characters indicating which test the results are for.
	XOP Output power test results
	XPC Power control test results
	XMI Modulation characteristics test results
	XIC Initial carrier test results
	XCD Carrier drift test results
	XSS Single slot sensitivity test results
	XMS Multi-slot sensitivity test results
	XMP Max input power sensitivity test results
Extended code	Single byte indicating the extended information code. The extended code is test related.
0	Standard results
Data	The data is in ASCII and is test dependent.

All data elements are comma delimited for clarity.

Output Power Test Results

Summary screen

Extended codes : 0	**Standard**
Results valid	e.g. TRUE (or FALSE)
Packet average power in dBm	e.g. -12.5
Test avg max in dBm	e.g. 11.6
Test avg min in dBm	e.g. 10.4
Test peak power in dBm	e.g. 11.2
Pass/fail result	e.g. PASS (or FAIL)

Example output: "OP0,TRUE,-12.5,11.6,10.4,11.2,PASS"

Extended screens

Valid stages : HOPONL, HOPONM, HOPONH, HOPONALL, HOPONANY, HOPOFFL, HOPOFFM, and HOPOFFH.

Results valid	: TRUE or FALSE	
Test max	: floating point value	e.g. –0.95
Test min	: floating point value	e.g. –0.97
Test peak	: floating point value	e.g. –0.83
Test Average	: floating point value	e.g. –0.95
Failed	: Integer	e.g. 2
Tested	: Integer	e.g. 10
State	: Text "PASS" or "FAIL"	e.g. PASS

Power Control Test Results

Summary screen

Extended codes	0	Standard
	1	All steps in last cycle
Results valid	e.g. TRUE (or FALSE)	
Average power of last packet in dBm	e.g. 0.4	
Maximum power of all packets in dBm	e.g. 1.5	
Minimum power of all packet in dBm	e.g. -2.6	
Maximum step size in dBm	e.g. 6.4	
Minimum step size in dBm	e.g. 2.5	
Pass/fail state	e.g. PASS (or FAIL)	

Example output if extended code 0

```
"PC0,TRUE, 0.4,1.5,-2.6,6.4,2.5,PASS"
```

If the extended code is 1, the result would appended to the end, each power steps average power for the last cycle. This comprises:

- Number of entries - e.g. 5 (Max number of steps kept is 50).
- Value in dB for the number of entries

Example output if extended code 1

```
"PC1,TRUE,0.4,1.5,-2.6,6.4,2.5,PASS,5,-20.8,-16.2,-14.9,-11.0,-5.8"
```

Extended screens

Valid stages	: HOPOFFL, HOPOFFM and HOPOFFH	
Results valid	: TRUE or FALSE	
Max power	: floating point value	e.g. –1.7
Min power	: floating point value	e.g. –41.1
Max step	: floating point value	e.g. 4.0
Min step	: floating point value	e.g. 2.8
Failed	: Integer	e.g. 0
Tested	: Integer	e.g. 26
State	: Text "PASS" or "FAIL"	e.g. PASS

Example output: -

XPC,HOPOFFL,TRUE,-1.7,-41.1,4.0,2.8,0,26,PASS

Initial Carrier Test Results

Extended codes	0	Standard
Results valid	e.g. TRUE	(or FALSE)
Frequency offset in Hz	e.g. 12E3	
Test average offset in Hz	e.g. 10.4E3	
Max positive offset in Hz	e.g. 34E3	
Max negative offset in Hz	e.g. -38E3	
Pass/fail result	e.g. PASS	(or FAIL)

Example output

```
"IC0,TRUE,12e3,10.4e3,34e3,-38e3,PASS"
```

Extended screens

Valid stages: HOPOFFL, HOPOFFM, HOPOFFH, HOPONALL, HOPONANY, HOPONL, HOPONM and HOPONH

Results valid	: TRUE or FALSE	
Average offset	: floating point value	e.g. 1.81E4
Max +ve offset	: floating point value	e.g. 2.07E4
Max –ve offset	: floating point value	e.g. 1.38E4
Failed	: Integer	e.g. 0
Tested	: Integer	e.g. 10
State	: Text "PASS" or "FAIL"	e.g. PASS

Example output: -

XIC,HOPOFFL,TRUE,1.81E4,2.07E4,1.38E4,0,10

Carrier Drift Test Results

Extended codes	0 Standard
Drift rate valid	e.g. TRUE (or FALSE)
Test drift rate in Hz/50uS	e.g. 24000
One slot drift valid	e.g. TRUE (or FALSE)
One slot packet drift in Hz	e.g. 23E3
Three slot drift valid	e.g. TRUE (or FALSE)
Three slot packet drift in Hz	e.g. -33E3
Five slot drift valid	e.g. FALSE (Five slot packets not tested)
Five slot packet drift in Hz	e.g. -31E3
Pass/fail result	e.g. PASS (or FAIL)

Example output

```
"CD0,TRUE,24000,TRUE,23E3,TRUE,-33E3,FALSE,-31E3,PASS"
```

Extended screens

Valid stages: HOPOFFL, HOPOFFM, HOPOFFH, HOPONALL, HOPONANY, HOPONL, HOPONM and HOPONH

DH1 results valid	: TRUE or FALSE
Max rate DH1	: floating point value e.g. 5170
Max drift DH1	: integer e.g. –7E003
Average drift DH1	: integer e.g. –4E003
DH1 Failed	: Integer e.g. 0
DH1Tested	: Integer e.g. 30
DH1 State	: Text "PASS" or "FAIL" e.g. PASS
DH3 results valid	: TRUE or FALSE
Max rate DH3	: floating point value e.g. 5170
Max drift DH3	: integer e.g. –7E003
Average drift DH3	: integer e.g. –4E003
DH3 Failed	: Integer e.g. 0
DH3Tested	: Integer e.g. 30
DH3 State	: Text "PASS" or "FAIL e.g. PASS
DH5 results valid	: TRUE or FALSE
Max rate DH5	: floating point value e.g. 5170
Max drift DH5	: integer e.g. –7E003

Average drift DH5	: integer	e.g. –4E003
DH5 Failed	: Integer	e.g. 0
DH5Tested	: Integer	e.g. 30
DH5 State	: Text "PASS" or "FAIL"	e.g. PASS

Example output

XCD,HOPOFFL,TRUE,5170,-7E003,-4E003,0,10,PASS,TRUE,5170,-7E003,-4E003,0,10,PASS,TRUE,5170,-7E003,-4E003,0,10,PASS

Carrier Drift ORESULT Output in Null Packet Mode

The reply to the ORESULT request for the carrier drift test when in NULL packet mode is as follows:

Null Average Drift valid	e.g. TRUE	(or FALSE)
Null Average Drift value in Hz	e.g. 24E3	
Null Maximum Drift valid	e.g. TRUE	(or FALSE)
Null Maximum Drift value in HZ	e.g. 25E3	
Dummy Entry 1	always FALSE	
Dummy Entry 2	always 0.0	
Dummy Entry 3	always FALSE	
Dummy Entry 4	always 0.0	
Pass/Fail result	e.g. PASS	(or FAIL)

Example output

```
"CD0,TRUE,24E3,TRUE,25E3,FALSE,0.0,FALSE,0.0,PASS"
```

Single Slot Sensitivity Test Results

Extended codes : 0 Standard

Results valid	e.g. TRUE	(or FALSE)
Current BER %	e.g. 0.005	
Overall BER %	e.g. 0.005	
Current FER %	e.g. 0.009	
Overall FER %	e.g. 0.009	
Pass/fail result	e.g. PASS	(or FAIL)

Extended codes : 1

Overall CRC frame errors	e.g. 5	Returned packet had a changed CRC
Overall Length frame errors	e.g. 1	Returned packet had a different length
Overall lost packet frame errors	e.g. 10	No packet returned or unrecognisable

Example output

```
"SS1,TRUE,0.005,0.009,0.009,0.009,PASS,5,1,10 "
```

Extended codes : 2

Total packets received	e.g. 100
Total bits in error	e.g. 120
Total frames in error	e.g. 10

Extended codes : 3

Total packets sent	e.g. 100

Extended screens

Note: The following screens are applicable to both the single and multi slot sensitivity tests, and also to maximum input power.

Valid stages	: HOPOFFL, HOPOFFM, HOPOFFH and HOPONANY (HOPONANY is not applicable to Maximum input power)	
Results valid	: TRUE or FALSE	
Overall BER	: floating point value	e.g. 0.019
Overall FER	: floating point value	e.g. 0.001
State	: Text "PASS" or "FAIL"	e.g. PASS
FER CRC	: Integer	e.g. 4
FER length	: Integer	e.g. 1
FER lost	: integer	e.g. 4

Packets received	: Integer	e.g. 7404
Bit errors	: integer	e.g. 11
Frame errors	: Integer	e.g. 8
Packets sent	: Integer	e.g. 7408

Example output: -

XSS,HOPOFFL,TRUE,0.19,PASS,4,1,4,7404,11,8,7408

Multi Slot Sensitivity Test Results

Extended codes : 0 Standard

Results valid	e.g. TRUE	(or FALSE)
Current BER	e.g. 0.005	
Overall BER	e.g. 0.005	
Current FER	e.g. 0.009	
Overall FER	e.g. 0.009	
Pass/fail result	e.g. PASS	(or FAIL)

Extended codes : 1

Overall CRC FERs	e.g. 5	Returned packet had a changed CRC
Overall Length FERs	e.g. 1	Returned packet had a different length
Overall lost packet FERs	e.g. 10	No packet returned or unrecognisable

Example output

```
"MS1,TRUE,0.005,0.009,0.009,0.009,PASS,5,1,10 "
```

Extended codes : 2

Total packets received	e.g. 100
Total bits in error	e.g. 120
Total frames in error	e.g. 10

Extended codes : 3

Total packets sent	e.g. 100

Extended screens

Refer to the extended screens section of the single slot sensitivity test.

Modulation Index Test Results

Summary screen

Extended codes	0 Standard
Results valid	e.g. TRUE (or FALSE)
Delta f1 max in Hz	e.g. 22E3
Delta f1 average in Hz	e.g. 143E3
Delta f2 max in Hz	e.g. 120E3
Delta f2 average in Hz	e.g. 119E3
Delta f2avg/ delta f1avg	e.g. 0.5
Pass/fail result	e.g. PASS (or FAIL)

Example output

"MI0,TRUE,22e3,143e3,120e3,119e3,0.5,PASS"

Extended codes	1
F2max % pass rate	e.g. 98.7%

Example output

"MI0,TRUE,22e3,143e3,120e3,119e3,0.5,PASS,98.7"

Extended screens

Valid stages	: HOPOFFL, HOPOFFM and HOPOFFH	
Results valid	: TRUE or FALSE	
F1 average	: floating point value	e.g. 1.551E005
F1 max	: floating point value	e.g. 1.368E005
F2 average	: floating point value	e.g. 1.585E005
F2 max	: floating point value	e.g. 1.304E005
F2avg/F1avg	: floating point value	e.g. 8.8E-001
F2 max Failed	: Integer	e.g. 0
F2 Max count (Total)	: Integer	e.g. 3
Failed	: Integer	e.g. 0
Tested	: Integer	e.g. 20
State	: Text "PASS" or "FAIL"	e.g. PASS

Example output

XMI,HOPOFFL,TRUE,1.551E005,1.368E005,1.585E005,1.304E005,8.8E-001,0,3,0.20,PASS

Input Power Test Results

Extended codes	**: 0**	**Standard**
Results valid	e.g. TRUE	(or FALSE)
Current BER	e.g. 0.005	
Overall BER	e.g. 0.005	
Current FER	e.g. 0.009	
Overall FER	e.g. 0.009	
Pass/fail result	e.g. PASS	(or FAIL)

Extended codes : 1

Overall CRC FERs	e.g. 5	Returned packet had a changed CRC
Overall Length FERs	e.g. 1	Returned packet had a different length
Overall lost packet FERs	e.g. 10	No packet returned or unrecognisable

Example output

```
"MP1,TRUE,0.005,0.009,0.009,0.009,PASS,5,1,10 "
```

Extended codes : 2

Total packets received	e.g. 100
Total bits in error	e.g. 120
Total frames in error	e.g. 10
Extended code	3
Total packets sent	e.g. 100

Extended screens

Refer to the extended screens section of the single slot sensitivity test.

Chapter 13. Auxiliary Commands

This chapter provides details of the auxilliary commands allowed over the GPIB interface to help development and demonstrations. The commands are detailed in alphabetical order as shown in the list below.

- CONNECT Connect to EUT address
- CONEUTNAME Read EUT user name on connection
- DISCONNECT Disconnect from device
- EUTRMTPWR Change the state of the EUT TX power
- FIXEDOFF Set fixed offset value
- GETEUTFEAT Obtain the supported features from the EUT
- INQCANCEL Cancel an inquiry
- INQRSP? Obtain the results of an inquiry
- INQUIRY Perform an inquiry
- LOOPBACK Perform a loop back test control sequence
- PATHDEL Delete an entry from a path loss table
- PATHEDIT Add or change entries in a path loss table
- PATHOFF Set path offset mode
- PATHRD Read a complete path loss table and output it over the GPIB
- PATHTBL Set path offset table
- TESTMODE Put the EUT into test mode
- TSTDELAY Set test control delay
- TXTEST Perform a TX test control sequence
- WRDTY Write the dirty parameter settings to the core

CONNECT (Connect to EUT Address)

This command will try to make an ACL connection to the devices whose address is already in the MT8850A/MT8852A as the EUT address.

Command format CONNECT

This command will not request the EUT features. Do not use this command to make a connection before running a normal test. Only use the RUN command to perform normal testing.

CONEUTNAME (Read EUT User Name on a Connection)

When a test or script is run, the MT8850A/MT8852A will first make a connection to the EUT. During this connection process the EUT features and user friendly name are requested. This command allows the user to turn off this request.

Set command

Command format	CONEUTNAME<ws><script><,><state>	
	<script>	1 to 10
	<state>	ON or OFF
Example	To set the requesting the name as OFF: CONEUTNAME 1,OFF	

Request command

Command format	CONEUTNAME? <script>
Example	Reply if OFF would be: CONEUTNAME 2,OFF

DISCONNECT (Disconnect From Device)

This command will disconnect any existing ACL connection. If an ACL connection does not exist, a execution error will be indicated. This command invalidated the EUT address when it is anything other than manual.

Command format DISCONNECT

EUTRMTPWR (Change the State of the EUT TX Power)

This command is used to alter the state of the EUT TX power if the EUT supports power control. If no connection is present, if the EUT does not support power control, or if the MT8850A/MT8852A has not got the supported features for the EUT, the command will report an execution error. This command can be used in conjunction with the EUTMAXPWR, set to OFF, to use the output power test to measure the power of each step.

Command format `EUTRMTPWR<ws><param>`

<param>	MIN	Set the EUT to minimum power
	DEC	EUT increments its power by one step
	INC	EUT decrements its power by one step
	MAX	Set the EUT to maximum power

FIXEDOFF (Set Fixed Offset Value)

This command is used to set or read the fixed path offset value applied in the single slot and multi slot sensitivity tests when the path offset mode is set to FIXED.

Set command

Command format `FIXEDOFF<ws><script no><,><value>`

<script number> 1 to 10
<value> number of dB (range 0 to -30.0 dB).

Example Set the fixed offset for the single slot sensitivity test to 10 dBm in script 4 the command would be:

```
FIXEDOFF 4,10.0DB
```

Request command

Command format `FIXEDOFF?<ws><script number>`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example `FIXEDOFF? 7,`

Response If script 7 single slot sensitivity test fixed offset was set to 2.3 dBm, the response would be:

```
FIXEDOFF 7,2.3
```

GETEUTFEAT (Obtain Supported Features from EUT)

This command is used to request the supported features from the EUT regardless of whether or not this information is already available from a previous request or connection. The features are then available to be read over the GPIB using the SYSCFG? EUTFEAT command. If a connection has not already been made an execution error will be reported

Command format `GETEUTFEAT`

INQCANCEL (Cancel an Inquiry)

This command will cancel an inquiry operation. The INQ bit in the Instrument Status Register will be set. The MAV bit will not be set and there will be no data in the Output Buffer. Any addresses found during the inquiry before the INQCANCEL command was received will be available via the INQRSP? command.

Command format `INQCANCEL`

INQRSP? (Obtain the Results of an Inquiry)

This command is used after an INQUIRY or INQCANCEL command to obtain the results of the inquiry.

Command format `INQRSP?`

Response `<n><,><response 1><,><response 2><,>…<response n>`

where

<n>	number of addresses found by the inquiry (256 max)

and

<response n>	<address><,><length of name><,><name string>

where

<address>	Bluetooth address in standard Bluetooth format.
<length of name>	Length of User Friendly Name (up to 20 characters).
<name string>	User Friendly Name truncated 20 characters maximum. Contains the string 'NO NAME' if there is no User Friendly Name.

INQUIRY (Perform an Inquiry)

This command will perform an inquiry based on the internal inquiry parameters already set up within the MT8850A/MT8852A. (See SYSCFG INQSET). On completion of the inquiry the INQ bit in the Instrument Status Register (INS) will be set. The MAV bit will not be set and there will be no data in the Output Buffer.

To obtain the results of an inquiry use the INQRSP? Command.

Command format `INQUIRY`

LOOPBACK (Perform a Loop Back Test Control Sequence)

This command allows a single loop back test control sequence to be requested. The command will be rejected with an execution error if an ACL connection does not already exist and the device the MT8850A/MT8852A is connected to is not already in test mode.

Command format

```
LOOPBACK<ws><pattern><,><hoptype><,><EUT txchan>
<,> <EUT rxchan><,><pkt><,><datalen><,>
<dirtyen><,> <dirty index><,><dirty
window><,><numpkts><,> <whitening>
```

`<pattern>`	DATA10101010 DATA11110000 DATAPRBS9
`<hoptype>`	FIXED: Fixed frequency using the EUT txchan and EUT rxchan settings STANDARD: Use standard hopping scheme of 79 channel
`<EUT txchan>` `<EUT rxchan>`	0 to 78 0 to 78
`<pkt>`	DH1, DH3 or DH5
`<datalen>`	Size in bytes of the payload to be used in the packet type chosen. DH1 maximum length is 27 bytes DH3 maximum length is 183 bytes DH5 maximum length is 339 bytes
`<dirtyen>`	ENABLE or ON DISABLE or OFF The dirty transmitter can only be enabled if a dirty parameter table has been written to the Bluetooth core first. This can be done using the WRDTY GPIB command.
`<dirtyindex>`	0 to 9 The dirty parameter table has 10 entries, the index is the offset from the start of the table from which to use the dirty parameters.
`<dirtywindow>`	1 to 10 This is the amount of the dirty table to use within the dirty table from the index to the end of the table. The table does not wrap around so if the index is 4 the maximum window is 6.
`<numpkts>`	0 to 10000 packets 0 means loop back until another test control or a disconnect.
`<whitening>`	ENABLE or ON DISABLE or OFF

PATHDEL (Delete an Entry from a Path Loss Table)

This command is used to delete an entry from a path loss table. If there is no entry for the given channel number in the table specified, a GPIB execution error will be returned.

Command format PATHDEL<ws><table><,><form><,><channel>

<table>	1 to 5
<form>	CHAN: The <channel> parameter is in channel form (0 to 78) FREQ: The <channel> parameter is in frequency form (2402MHZ to 2480MHZ)
<channel >	0 to 78 (or 2402MHz to 2480MHz)

PATHEDIT (Add or Change Entries in a Path Loss Table)

This command is used to add or change entries in a path loss table. If the channel number entered already exists, the offset for that channel will be updated to the new value. If the channel number does not already exist in the table specified, the new entry will be added.

Set command

Command format PATHEDIT<ws><table><,><form><,><channel><,><offset>

<table>	1 to 5
<form>	CHAN: The <channel> parameter is in channel form (0 to 78) FREQ: The <channel> parameter is in frequency form (2402MHZ to 2480MHZ)
<channel >	0 to 78 (or 2402MHz to 2480MHz)
<offset>	Offset in dBs. Range is 0 to –30

Example To set the offset for channel 4 (2406MHz) to –2.3dB in table 3:

```
PATHEDIT 3,CHAN,4,-2.3
```

Request command

Command format PATHEDIT?<ws><table><,><form><,><channel>

Example To read the offset for table 3 channel 4 in channel form use:

```
PATHEDIT? 4,CHAN,4
```

Response Reply would be in the offset -2.3

PATHOFF (Set Path Offset Mode)

This command is used to set up the user path offset mode for the single slot and multi slot sensitivity tests. This is the path loss offset that is added to the transmitted power.

Set command

Command format `PATHOFF<ws><script number><,><mode>`

<script number> 1 to 10
<mode>

OFF	Apply no user offsets
FIXED	Apply the fixed offset value for all channels
TABLE	Apply the offset table

Example To set the single slot sensitivity test to use the fixed offset value the command would be:

```
PATHOFF 4,FIXED
```

Request command

Command format `PATHOFF?<ws><script number>`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example `PATHOFF? 7`

Response If script 7 multi slot sensitivity test path offset was set to use the path offset table, the response would be:

```
PATHOFF 7,TABLE
```

PATHRD (Read a Complete Path Loss Table)

This command will read a complete path loss table and output it over the GPIB.

Command format PATHRD<ws><table><,><form>

<table>	1 to 5
<form>	CHAN: The <channel> parameter is in channel form (0 to 78) FREQ: The <channel> parameter is in frequency form (2402MHZ to 2480MHZ)
<channel >	0 to 78 (or 2402MHz to 2480MHz)
<offset>	Offset in dBs. Range is 0 to –30

Example To set the offset for channel 4 (2406MHz) to –2.3dB in table 3:

```
PATHEDIT 3,CHAN,4,-2.3
```

Output format <number of entries><,><entry><,><entry>

<number of entries>	Number of entry sets that follow. If zero no entries follow
<entry>	Each entry consists of a channel (or frequency number) followed by a loss: `<channel><,><loss>`

Example For PATHRD 1,CHAN: 2,0,-2.3,4,-14.7
For PATHRD 1,FREQ: 2,2.402e+009,-2.3,2.406e+009,-14.7

PATHTBL (Set Path Offset Table)

This command selects which of the PATH offset tables is applied to the script.

Set command

Command format `PATHTBL<ws><script no><,><table no>`

<script number> 1 to 10
<table number> 1 to 5

Example To select offset table 3 in script 4 the command would be:

```
PATHTBL 4,3
```

Request command

Command format `PATHTBL?<ws><script number>`

<script number> 1 to 10

Response The response will be returned in the form of the command to set that state.

Example `PATHTBL? 7,`

Response If the offset table for script 7 was 2, the response would be:

```
PATHTBL 7,2
```

TESTMODE (Put the EUT into Test Mode)

This command will set the device the MT8850A/MT8852A is connected to into test mode. The slave device must have test mode enabled locally for the command to succeed.

An execution error will be indicated if the command fails.

Command format `TESTMODE`

TSTDELAY (Test Control Delay)

Each device will react to a test control command at a different speed. This command allows a delay to be set up for each script to allow for the time taken to change to the test control parameters. The test control delay is set in number of packets.

Set command

Command format `TSTDELAY<ws><script number><,><number of packets>`

<script number> 1 to 10

<number of packets> 0 to 100 (Default 10).

Example To set the test control delay of script 1 to 100 packets, use the command:

```
TSTDELAY 1,100
```

Request command

Command format `TSTDELAY?<ws><number of packets>`

<number of packets> 0 to 100 (Default 10).

Response The response is in the form of the command to set that particular state.

Example If the test control delay of script 3 is 10 packets then the command would be:

```
TSTDELAY? 3
```

Response The response would be:

```
TSTDELAY 3,10
```

Command format `TSTDELAY<ws><number of packets>`

<number of packets> 0 to 100 (Default 100).

TXTEST (Perform a TX Test Control Sequence)

This command allows a single TX test control sequence to be requested. The command will be rejected with an execution error if an ACL connection does not already exist and the device the MT8850A/MT8852A is connected to is not already in test mode.

Command format

```
TXTEST<ws><pattern><,><hoptype><,><txrxchan>
<,><pkt><,><datalen><,><numpkts>
```

`<pattern>`	DATA10101010 DATA11110000 DATAPRBS9
`<hoptype>`	FIXED: Fixed frequency using the EUT txchan and EUT rxchan settings. STANDARD: Use standard hopping scheme of 79 channels.
`<txrxchan>`	0 to 78 TX and RX frequency of the EUT.
`<pkt>`	DH1, DH3 or DH5
`<datalen>`	Size in bytes of the payload to be used in the packet type chosen. DH1 maximum length is 27 bytes DH3 maximum length is 183 bytes DH5 maximum length is 339 bytes
`<numpkts>`	0 to 10000 packets 0 means loop back until another test control or a disconnect

WRDTY (Write the Dirty Parameter Settings to the Core)

This command is used to configure a set of dirty parameters for the LOOPBACK command. The command selects a dirty parameter table from either the multi-slot or single-slot sensitivity tests from any script.

Command format WRDTY<ws><script number><,><test>

<script number >	1 to 10
<test>	SS: Single slot sensitivity MS: Multi slot sensitivity

Appendix A. Supported Features Format

Byte	Bit	Supported feature
0	0	3-slot packets
	1	5-slot packets
	2	encryption
	3	slot offset
	4	timing accuracy
	5	switch
	6	hold mode
	7	sniff mode
1	0	park mode
	1	RSSI
	2	channel quality driven data rate
	3	SCO link
	4	HV2 packets
	5	HV3 packets
	6	u-law log
	7	A-law log
2	0	CVSD
	1	paging scheme
	2	power control
	3	Transparent SCO data
	4	Flow control lag (bit 0)
	5	Flow control lag (bit 1)
	6	Flow control lag (bit 2)

Appendix B. GPIB PC Card Setup

The following GPIB driver configuration set up is recommended for reliable GPIB communication with the MT8850A/MT8852A. The set up is expressed in the terms used by the National Instruments GPIB ISA and PCI cards and drivers for WIN95 and DOS.

GPIB Device Template

The MT8850A/MT8852A default primary address is 27. Separate device templates for the primary address of each device can usually be set up separately. The settings for the device template for the MT8850A/MT8852A are:

Terminate read on EOS	NO
Set EOI with EOS on write	YES
Type of compare on	EOS 8 bit
EOS byte	0x0A (10 decimal)
Send EOI at end of write	YES
Readdressing	YES
Secondary address	NONE

GPIB Card Settings

The recommended GPIB card settings for use with the MT8850A/MT8852A Series are:

Terminate read on EOS	NO
Set EOI with EOS on writes	YES
Type of compare on	EOS 8 bit
EOS byte	0x0A (10 decimal)
Send EOI at end of write	YES
System controller	YES
Assert REN when SC	YES
Enable Auto Serial polling	NO
NI card. Cable length for HS488	OFF

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